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BRIEFLY TOLD.

PROGRESS IN THE MATTER OF THE GAS EXHIBITION.—These indeed be piping times for Chairman McLean, of the Exhibition Committee, and his men, for several days—yes, it might go into weeks, if the truth were wholly told—have been devoted to piping the Garden for actual illumination and for decorative lighting as well. It was a most perplexing job, and illuminating engineers of all sorts were concerned thereon. However, we imagine ordinary, everyday engineer Simpson, aided and abetted possibly by ordinaries Smith, Fogg, *et al.*, did pretty much all of the laying out. In all seriousness the task—that of properly and effectively lighting the interior of the structure, and providing for the power and domestic end of the scheme with heating medium in sufficient volume, has been satisfactorily arranged. Of course, much in the way of detail still remains to be done, but all concerned may rest assured that it will be well and creditably done. The exhibition is only a month off now, and only the truth is told when it is said that the Exhibition *per se* will be the best of any heretofore held either here or abroad.

TWO MATTERS DISPOSED OF.—We have in hand, also in mind, a brace of matters which seem to us to require just a mention sufficient to put our readers to the point of knowing that we have not failed to have them in hand and mind, although not much has been said by us concerning them. The first of these has to do with the "Proceedings" of the meeting of the American Gas Institute, which our readers well know was held in Detroit last October—in fact a shade over a month ago. Now, as the Publication Committee and the Secretary are presumed to have the printing of the records of the meeting in charge, and that they will "release" such matter at their own time and in their own way; but, judging from a simple request made to the Secretary during the Detroit convention, which request was negatived, it was deemed best not to ask for anything further lest it should be denied. We have waited for copy, seemingly not in vain, for yesterday (Wednesday) a batch of it was received. However, it came to hand too late to be of avail for this week's issue. Remember that this is not said or written in any complaining spirit, and any mention is made of it simply that our readers may know it is not through any lack of enterprise on our part that the printing of the "Proceedings" in the JOURNAL has been so long delayed.

The other "matter" is this: In the issue of the JOURNAL, dated April 13th last, there was printed a communication thus entitled, "The Emergency Department Maintained by the Consolidated Gas Company, of New York City." Prepared for the JOURNAL by Mr. Oscar H. Fogg. In the JOURNAL, dated November 1st last, there was printed a paper entitled, "The Emergency Service of the Los Angeles Gas and Electric Corporation." It was prepared for the last meeting of the Pacific Coast Gas Association by Mr. C. D. Vance. The first paragraph of each article is as paralleled:

[1]Not only have the interests of the Company been safeguarded, but the protection which this system affords to the public is of inestimable value, providing as it does a means of promptly rectifying at any hour defects in or disarrangement of the consumers' house piping, fixtures or appliances, over which the Company does not ordinarily exercise control.

[2]Not only have the corporation's interests been safeguarded by this service, but the protection which it affords to the public is of inestimable value, providing as it does a means of promptly rectifying at any hour defects in or disarrangements of the consumers' house piping, over which gas companies do not ordinarily exercise control.

1. JOURNAL, 2. Vance,

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The "similarity" thus shown in the opening paragraphs, runs through the entire article. Our only reason for calling attention to this is, we disliked to have Mr. Vance, or anyone else for that matter, get away altogether with the idea that such things could be brought off without our having cognizance of them.

ELIMINATING THE QUACK ILLUMINATING ENGINEERS.—The youngest of our large societies, which deals with the subject of light, "The Illuminating Engineering Society," has before it the rather delicate operation of separating the chaff from the wheat; and, inasmuch as the interests which compose its membership are many and varied, the matter will require expert handling in order to be successful. Although an engineering society, it is not a society of engineers, as all interested in the subject are eligible upon an equal footing; and, broadly speaking, the results of this arrangement have been good. If the subject is to obtain its requisite standing, the qualifications for membership must be altered and likewise the grades. The committee, appointed by President W. H. Gartley, to consider division of membership, will report at the annual meeting in January, in favor of "Fellowships," which are to be conferred by the Council upon the recommendations of a committee. At first sight this looks like a rather pretentious programme, but as there are very few practising illuminating engineers this method of procedure would probably be the most effective one to pursue in attempting to raise the standard of the Society. If societies, nations or men are to work upon the lines suggested by Washington, "Let us raise a standard to which the wise and honest can repair," the work must come from within, and the creation of fellowships in this Society would be a means to this end. Of the need there can be no doubt.—SPECTATOR.

EXTENDING THE USE OF GAS IN OUR PUBLIC SCHOOL SYSTEM.—The Board of Education, of the City of New York, will to-day open bids for the installation of mantle burners in 10 public schools. Two methods of bidding are open to those interested, viz., "Purchase and Maintenance," or "Rental." By the "rental" system of maintenance is meant a system by which mantle lamps as described shall be furnished, installed and operated in the public school buildings by the company having the contract for the same, the said company charging a stated sum per month as rental for each lamp. By the "purchase and maintenance" system is meant that the lamps complete are to be purchased by the Department of Education, and after the payment for the furnishing and original installation of said lamps, they are to be maintained by the company furnishing the said lamps at a specified sum per lamp per month. A separate proposal upon either system or upon each of both systems must be submitted for each school, and award will be made thereon. The current large use of gas in school buildings is to be considerably increased; and, further, all halls and corridors are to be lighted by means of gas where electricity is used elsewhere in the buildings.

THE PRESENT AND FUTURE OF GAS LIGHTING.—We are publishing in this issue the last of a series of articles from our correspondent, Mr. H. Thurston Owens, covering notes made and impressions formed by him respecting one plan of the use of gas in Europe. That we have accomplished much at home in the instance of street lighting may not be gainsaid, but that we have much to learn is also a truth. The author has not attempted to belittle the work done here, but has offered many comparisons which should, and undoubtedly will, spur us on toward greater efforts. The matter of proper maintenance is a subject of vital importance, for it carries with it the great asset of goodwill. The question of art in fixture design will add to our reputation, and the one of the increased use of gas will obtain more substantial rewards. High pressure lamps are of greater efficiency and, therefore, will be included ere long in our list of specialties for the improvement of lighting. Public lighting deserves the high place it has always held, and with the continuedly increasing interest being taken in the matter by the governors of municipalities, should increase far beyond its present notable proportions. This should be especially true of ornamental installations, and for those wishing to take up this phase of the subject we venture to state that the designs illustrating these articles constitute the most complete set of European models so far published in this country. That the general use of gas throughout Europe means something in the way of output is also true, and those of a statistical turn would be well repaid should they investigate sales per capita abroad and compare them with those of their home cities. Although nearing its centennial in this country, the development of the use of gas is yet young, and the possibilities of the future appear far brighter than the realities of the past and the present.

CURRENT MENTION.—

WE are indebted to the courtesy of Mr. L. P. Trevor, of New Haven, Conn., for the following notification respecting the action of the Directors of the New Haven Gas Light Company over the death of Mr. P. N. Welch:

"The following resolutions were adopted by the Board of Directors of the New Haven Gas Light Company, at a special meeting held November 9th, 1909:

"On the 27th day of October, 1909, Mr. Pierce N. Welch, who had been since November 5th, 1889, a member of this Board—succeeding his father, Honorable Harmanus M. Welch—and since January 2d, 1894, Vice-President of the Company, died at Berlin, Germany. Through these offices, and as a member of the Finance Committee since January 8th, 1894, he has been closely identified with the affairs and growth of this Company, and has given to it faithful and devoted service.

"He was a man of many and varied activities, and filled numerous positions of trust and responsibility, which gave him an important position in the life of this community and made him one of its most useful citizens; yet he was an exceptionally quiet and unassuming man, with a strong dislike for ostentation.

"A man of education and cultivation, he gave his support generously to every cause which stood for the enlightenment and benefit of mankind. His gift of Welch Hall testifies to his love for Yale University, but countless gifts and acts of kindness will only be known to those upon whom he bestowed them.

"By his lovable nature and his unswerving adherence to justice, right and duty, he earned our friendship and respect. We shall honor his memory as we honored him, as exemplifying the highest type of Christian manhood.

"In token of our regard, we direct that this minute be entered upon the records of this Board, and that a copy be sent, with our sympathy, to his wife and children.—J. A. NORCROSS, Secretary."

"P. V.," writing to us under date of the 13th inst., from Bay City, Mich., says: "We cut out 'Billy' Austin from this place some days ago, simply because he left our meter shops to become a member of the staff of the Chattanooga (Tenn.) Gas Company. I said 'we cut him out,' but the real truth of the matter was we presented him with a mighty fine shaving set, so we only gave him tools for cutting. That his whiskers may never grow less is our heartiest wish, for he sure is the right sort of man to have in a shop."

AT the annual election for Directors in the Brooklyn Union Gas Company the only change recorded was the naming of Mr. H. H. Rogers to the vacancy occasioned by the death of his father.

MR. W. H. WHITTON, Purchasing Agent for the Laclede Gas Light Company, of St. Louis, Mo., has been elected its Treasurer. He assumes office the 1st prox.

MR. CARLTON GEIST has resigned the position of Manager of the Lansing (Mich.) Fuel and Gas Company, to assume the management of the properties at Atlantic City, N. J., which properties were recently taken over by the syndicate, of which his brother (Mr. C. H. Geist) is the head.

THE American Gas Company has declared a semi-annual dividend of 3½ per cent., which puts the stock on a 7 per cent. basis instead of 6.

THE special election, to determine whether or not the franchise of the Muskogee (Okla.) Gas and Electric Company should be extended for a period of 25 years, has been postponed until the 13th of January next.

MR. C. H. KELSEY has been elected President of the Elkhart (Ind.) Gas Company, vice Mr. Wm. Alden Smith. The latter, however, retains his monetary interest in the Company.

THE Hartford City (Conn.) Gas Light Company has awarded to the Gas Machinery Company, of Cleveland, O., a contract for the construction of a 10-foot water gas set. This will make 3 installations of the Machinery Company's type of water gas apparatus on the Hartford plant.

MR. FRANK E. CURTIS, since 1886 connected in various capacities with the North Adams (Mass.) Gas Light Company, has handed in his resignation, the same having effect last Saturday. He has identified himself with the sales division of the American Stove Company, with headquarters in Cleveland, O. We congratulate the American Stove Company on having retained Mr. Curtis, and there cannot be the slightest doubt that the records will show that he will deliver the goods. Capable, honest, truthful and popular, we wish for him the fullest possible measure of success.

Some Notes from Abroad.

[Communicated.]

Paris, the "Queen of the Cities!" To what extent has the use of gas for public lighting played its part in making this title real and potent? Surely a considerable one, for it has another title, "La Ville de Lumiere," and in the minds of many she would not have the former were it not for the latter.

If she is to hold the latter title she must make greater strides than she has in the past decade, however, for we are making history very rapidly in the increased use of high candle powered units, and higher illumination intensities and, with one exception, Paris has rested upon her laurels. The one effort is upon the Avenue de L'Opera, where flame arc lamps have been placed in such a manner and in such profusion as to resemble the sideshow of a circus. These lamps replaced low pressure mantle, gas lamps, just as Jablochkoff's arcs replaced open flame gas in 1878. And it is to be hoped that history will repeat itself *in seriatim*, and that the present arcs will come down as did those of the original type.

That the older installations have set a high artistic standard there can be no doubt whatsoever. The post, shown in Fig. 1, is the regu-

Fig. 1.—Standard Gas Lamp, Paris.

lar mantle gas lamp, and those in Fig. 2 are a special type in the

Fig. 2.—In the Court of the Louvre, Paris.

court of the Louvre. Illustrations of Paris which did not include the beautiful tree-lined Boulevards would not be fair to the city, and one of the smaller ones, Boulevard Haussman, is shown in Fig. 3.

Fig. 3.—A Happy Combination, Paris.

The lamp with its welcome clock is located upon an "Isle of Safety" in one of the busiest spots in Paris, midway of the Gar St. Lazare and the Church of the Madeline.

Another feature of Paris which cannot be neglected is that of her bridges, and Pont Alexander III., shown in Fig. 4, surely ranks

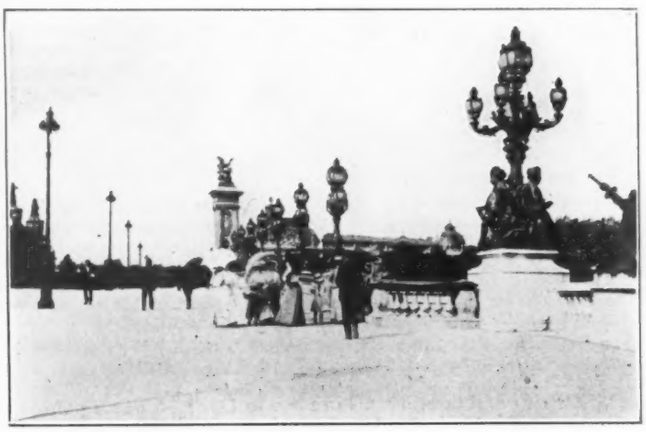


Fig. 4.—Pont Alexander III., Paris.

among the finest in all the world. The crowning features of this

Fig. 5.—Boulevard Anspach, Brussels.

structure are the lamps; and works of art they surely are. The arc lamps shown to the left of the picture are the standard city equipment. Brussels, the Paris of the North, uses gas for public lighting with much the same profusion as does its larger sister; and, in fact, the standard lamp shown in Fig. 1 is also the pattern used here. That the main square facing the Monument Anspach, shown in Fig. 5, has gas lamps almost *ad libitum*, may be judged from the illustration.—OWENS.

November Meeting, New York Section, Illuminating Engineering Society.

The Society held the November meeting on the 11th inst. at the Engineering Society's building, and during the session a general discussion of the following subjects was invited:

"What qualifications should a person possess before he is entitled to assume the title of Illuminating Engineer? and should there be a division in membership?"

The Chairman, Mr. E. L. Elliott, called the meeting to order and although no set paper was to be delivered there was a good attendance and many of those present shared in the discussion. In opening, Mr. Bassett Jones called attention to the fact that art and engineering have no common ground and that persons of an artistic mind were rarely practical, and *vice versa*. That the efficiency of illumination may not be judged by the flux upon a plane 3 feet from the floor, or at any other height, as the real efficiency is a physiological effect upon the eye. Architects desire a certain lighting effect, and the work of the illuminating engineer is confined to the details of the lamps, reflectors, etc., which will produce that effect.

Mr. W. H. Gardiner stated that a man should possess a thorough scientific knowledge of the laws of light and illumination and have a practical, responsible and extended experience before he should assume the title.

After further discussion between the above mentioned regarding the relations between science and art, Dr. A. H. Elliott brought out the fact that engineering is the economical application of scientific laws, and inasmuch as that was true, art did not enter into the case. Mr. Owens stated that if the self-styled illuminating engineers had all of the qualifications as outlined by Mr. Gardiner, the Society would not be discussing the question.

After further remarks, by Messrs. T. I. Jones and N. Macbeth, the Chairman closed the discussion and called attention to the fact that lighting overlaps to a certain extent the aesthetic side, and if this were not true, architects would take more kindly to the subject. Engineering is applied science, and if illuminating engineers confined themselves to the engineering features alone there could be no clash with either architects or decorators.

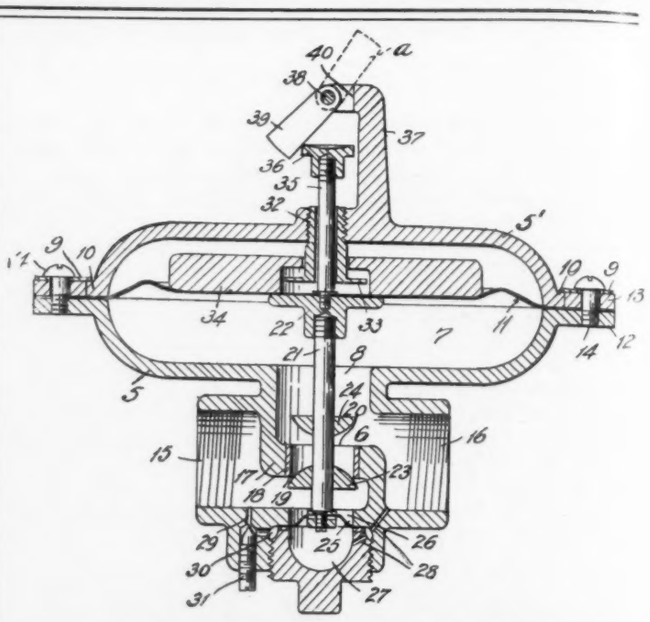
At the last annual meeting President W. H. Gartley nominated a Committee to report on the Division of Membership, and Mr. E. L. Elliott, the Chairman of that Committee, stated that they would report, at the annual meeting in January, in favor of having Fellows elected by the Council upon the recommendation of a Committee on Fellowship. This subject was very warmly discussed by Dr. Elliott and Messrs. Marshall, Bassett Jones, T. I. Jones, C. W. Jones, Macbeth, Gardiner, Forchette and Owens, and it was brought out that practically all societies have classes of membership except this one. But many argued that the time was not ripe to bring this change about, whereupon, on motion of Mr. Marshall, it was voted by those present that any action taken at the present time would be premature.

The December meeting of the Society will be held in the Concert Hall, Madison Square Garden, the night of December 17th, in connection with the gas exhibition which is to be carried on under the auspices of the National Commercial Gas Association. At that time Mr. H. Thurston Owens will deliver a lecture, illustrated with stereopticon views, on the subject of "Street Lighting Fixtures," and the beautiful model showroom recently opened in New York city by the Consolidated Gas Company, under the capable direction of Mr. H. B. McLean, will be described by Mr. V. R. Lansingh.

Petley's Safety Regulator.

United States Letters Patent have been granted to Mr. B. H. Petley, of Seattle, Wash., for a safety regulator, the construction and operation of which are clearly understandable from the following illustrated text:

With the valves in the positions shown in the drawing, the device acts in the capacity of a regulator tending to maintain a uniform fluid pressure, and any variation of the latter against the under side of the diaphragm 11 causes a further opening or closing of the valve 23 to bring about such desired delivery pressure. Should the pressure against the underside of the diaphragm 11 be reduced, either by a discontinuance of the initial pressure or by an excessive fluid delivery, as might be caused by a broken discharge pipe, until the delivery



pressure can no longer support the diaphragm 11, and the attachments thereto, then the valve 24 is caused to close upon its seat 20, and will thus remain closed until a sufficient pressure against the diaphragm 11 is re-established, provided that the dog, 39, is caused to be inoperative, as when the same is thrown over in the position indicated by *a*. Should the dog be allowed to be operative, as when hanging in the position indicated by full lines in the view, then it will engage over the head 36, coincidentally with the closing of the valve 24, to lock the same against reopening until the dog is manually disengaged to release the valve.

Assuming that the dog is in its aforesaid imperative position, and all openings in the delivery pipe are closed, then a resumption of the initial pressure and a flow of the fluid, through the by-pass connections 29, 30 and 28, will afford a gradual accumulation of pressure at the delivery side, which will ultimately affect the diaphragm 11 to reopen the valve 24. The flow of the fluid is accordingly restored through the valve opening, and is normally regulated through the agency of the valve 23.

For example, with coin controlled gas meters, the supply of gas is stopped through the failure to insert a coin before the supply afforded from the previously deposited coin is extended. This stoppage in the meter terminates the flow of gas through the open burners and all lights are extinguished. A renewal of the supply of gas through the insertion of another coin in the meter causes a resumption of flow through the open burners without ignition and with probable fatal results. With this device a stoppage of the supply causes the cut-off valve to close and, where the supply of gas is resumed through the insertion of another coin, the gas will flow in limited quantity through the by-pass and delivery pipe to the burners which, if the latter are closed, will cause an accumulation of pressure in the pipe and against the diaphragm that will subsequently open the cut-off valve and renew the supply to the burners. The quantity of gas permitted to flow through the by-pass is insufficient to cause serious results. One-half a cubic foot of water gas per hour through the by-pass, and containing 30 per cent. of carbon monoxide, discharging into a totally closed room, 9 feet by 13 feet by 13 feet, would require more than 100 hours to cause a fatal condition, which is found in atmosphere containing 1 per cent of carbon monoxide, according to trustworthy authorities. A few seconds only are required to cause sufficient pressure to accumulate in the delivery pipe to effect the automatic reopening of the cut-off valve.

Should the delivery pressure exceed a desired amount the diaphragm 11 will be acted upon to close the valve 23 in opposition to the force of the weight 34, which must be overcome before the valve 23 can be closed. The diaphragm 25 serves as a balancing agent with reference to the valves 23 or 24, and with respect to the initial and delivery pressures of the fluid.

Relations between Units of Illumination in Different Countries.

The following note and table were contributed by Dr. B. Monasch (Augsburg, Germany) to the September issue of the *Illuminating Engineer*, London, England:

On July 1st, 1909, the Bureau of Standards, Washington, D. C., began to express photometrical results in terms of the new "international unit," which is defined as follows:

1 pentane candle = 1 American candle = 1 Bougie Decimale = 0.90 Hefner candle. The relations between the illumination units are as follows:

Results Expressed in	Factor for Conversion into the Desired Unit. 1. Hefner Meter (German Lux).	2. Hefner Foot.	3. International Candle Foot.	4. Intern. Candle Meter. Intern. Bougie Meter. Intern. Lux.	5. Carcel Meter.
1. Hefner meter (German Lux).	1.	0.0929	0.0837	0.9009	0.093
2. Hefner foot	10.76	1.	0.9009	9.71	1.001
3. International candle foot	11.95	1.11	1.	10.76	1.034
4. International candle meter.. " bougie meter.. " Lux	1.11	0.103	0.0929	1.	0.104
5. Carcel meter	10.75	0.9986	0.966	9.61	1.

Annual Meeting, American Society of Mechanical Engineers.

The Thirtieth annual meeting of this sterling Society will be held in the Engineering Societies' Building, 29 West 39th street, New York, December 7 to 10. The entire social entertainment will be in charge of the members resident in and about New York, under the immediate direction of a local committee appointed by them, of whom Mr. William D. Hoxie is Chairman. For Wednesday afternoon, December 8, an excursion is planned which members and guests will be asked to attend in a body. During the balance of the time there will be opportunities for smaller parties to visit places of interest. In the evening, there will be a lecture for members and guests upon the subject of "Agricultural Machinery."

The professional papers assigned to the meeting are as follows:

"Tests on a Venturi Meter for Boiler Feed," by Charles H. Allen.

"The Pitot Tube as a Steam Meter," by Geo. F. Gebhardt.

"Efficiency Tests of Steam Nozzles," by F. H. Sibley and T. S. Kemble.

"An Electric Gas Meter," by C. C. Thomas.

"Tan Bark as a Boiler Fuel," by David M. Myers.

"Cooling Towers for Steam and Gas Power Plants," by J. R. Bibbins.

"Some Studies in Rolling Mill Engines," by W. P. Caine.

"An Experience with Leaky Vertical Fire Tube Boilers and the Best Form of Longitudinal Joint for Boilers," by F. W. Dean.

"Testing Suction Gas Producers with a Koerting Ejector," by C. M. Garland and A. P. Kratz.

"Bituminous Gas Producer," by J. R. Bibbins.

"The Bucyrus Locomotive Pile Driver," by Walter Ferris.

"Line-Shaft Efficiency, Mechanical and Economic," by Henry Hess.

"Pump Valves and Valve Areas," and a Report on Cast Iron Test Bars, by A. F. Nagle.

In addition to the above papers there will be several valuable reports submitted by committees of the Gas Power Section.

Westinghouse Bituminous Producer in Double Role Harness in Sheet Metal Factory.

We are informed that a Westinghouse bituminous gas producer, for supplying fuel to gas engines, as well as furnishing gas for solder baths and enameling kilns, has been installed by the S. F. Bowser Mfg. Company, maker of oil storage and distributing tanks and automatic weighing pumps, in its modern factory at Fort Wayne, Ind. This type T-producer plant, of 350-horse power capacity, supplies three 120-horse power, tandem horizontal engines, direct-connected to direct-current generators. These furnish power for the shops, which are motor driven throughout. The equipment replaced by the present installation comprised three 150-horse power Scotch marine boilers, equipped with underfeed stokers, supplying steam to 50-horse power and 125-horse power, simple engines.

In the shops a large quantity of gasoline was formerly used for melting solder, while coke was required for the enameling kilns. Recognizing the superior economy to be obtained from producer equipment, as well as the advantage of doing away with gasoline and coke in its own special case, the Bowser Company decided to install a complete new equipment for gas engines and gas producers. The matter of selecting a bituminous producer was carefully weighed, and members of the firm visited a number of installations throughout the country to study the performance of the types in operation at the present time. The West Virginia coal, 13,000 B.T.U. per pound, used in the producer at present, is delivered at a cost of $2.25 per ton. A Green county Indiana coal, of approximately the same heat value, has been successfully experimented with and will cost, delivered, $2.25 per ton. The installation was made under the supervision of Mr. A. A. Bowser, brother of the President of the Company.

Meeting Times of the Various Gas Associations.

American Gas Institute.—Annual meeting, October, 1910. Atlantic City, N. J. Officers: President, Wm. H. Bradley, N. Y., City; Secretary, A. B. Beadle, 29 West 39th street, N. Y. City.

Canadian Gas Association.—Annual meeting, June, 1909. Hamilton, Ont. Officers: President, J. S. Norris, Montreal, P. Q.; Secretary and Treasurer, A. W. Moore, Woodstock, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov. 17 and 18, 1909. New York City. Officers: President, William T. Morris; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Guild of Gas Managers of New England.—Annual meeting, December. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, A. K. Quinn; Newport, R. I.; Secretary, Walter G. Africa, Manchester, N. H.

Illinois Gas Association.—Annual meeting, time, March 18, 1910, Chicago, Ills. Officers: President, E. G. Schmidt, Springfield, Ills.; Secretary-Treasurer, C. B. Strohn, Elgin, Ills.

Illuminating Engineering Society.—Annual meeting, January 14, 1910. Meetings of Sections, monthly. President, W. H. Gartley, Philadelphia, Pa.; Secretary, Preston S. Millar, 29 W. 39th street, N.Y. City Sections: New York: Secretary, Albert J. Marshall, 227 Fulton street. New England, Secretary, L. D. Gibbs, 39 Boylston street, Boston, Mass. Philadelphia, Secretary, G. R. Hemminger, Broad and Arch streets. Chicago, Secretary, G. H Jones, 139 Adams street.

Indiana Gas Association.—Annual meeting, January 19, 1910, Indianapolis, Ind. Officers: President, J. W. Dunbar, New Albany, Ind.; Secretary-Treasurer, Philmer Eves, Indianapolis Gas Company, Indianapolis, Ind.

Iowa District Gas Association.—Annual meeting, time, June 23, 24, 25, 1910, Sioux City, Ia. Officers: President, Geo. H. Waring, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ———— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, September, 1910; ———— Officers: President, B. O. Tippy, Grand Rapids, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April 14, 15 and 16, 1910; Jefferson City, Mo. Officers: President, W. A. Bixby; Secretary and Treasurer, C. L. Clary, Sikeston, Mo.

National Commercial Gas Association.—Annual meeting, Dec. 14-22, 1909; New York, Officers: President, J. D. Shattuck, Chester, Pa.; Secretary-Treasurer, Lucius S. Bigelow, 106 Fulton street, New York City.

Natural Gas Association.—Annual meeting, May 17, 18 and 19, 1910; Oklahoma City, Okla. Officers: President, William H. McKenzie, Kansas City, Kas.; Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, third Wednesday in February; Boston. Officers: President, Walter G. Africa, Manchester, N. H.: Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

Oklahoma Electric Light, Railway and Gas Association.—Annual meeting, May 18, 19 and 20, 1910; Oklahoma City. Officers: President, F. H. Tidman, Oklahoma City, Okla.; Secretary-Treasurer, Galen Crow, Guthrie, Okla.

Pacific Coast Gas Association.—Annual meeting, ———— —, 1910, Los Angeles, Cal. Officers: President, W. H. Cline, Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 925 Franklin street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April 13, 1910, Easton, Pa. Officers: President, E. G. Holzer, Easton, Pa.: Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, Dec. 9, 1909; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary George G. Ramsdell, 1123 Broadway, New York.

Southern Gas Association.—Annual meeting, Feb. 16, 1910, Chattanooga, Tenn. Officers: President, R. C. Congdon, Atlanta, Ala.; Secretary-Treasurer, James Ferrier, Rome, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. ———— 1910, Beaumont, Tex. Officers: President, R. B. Stichter, Dallas, Tex.; Secretary's office, 300 Commerce street, Dallas, Tex.

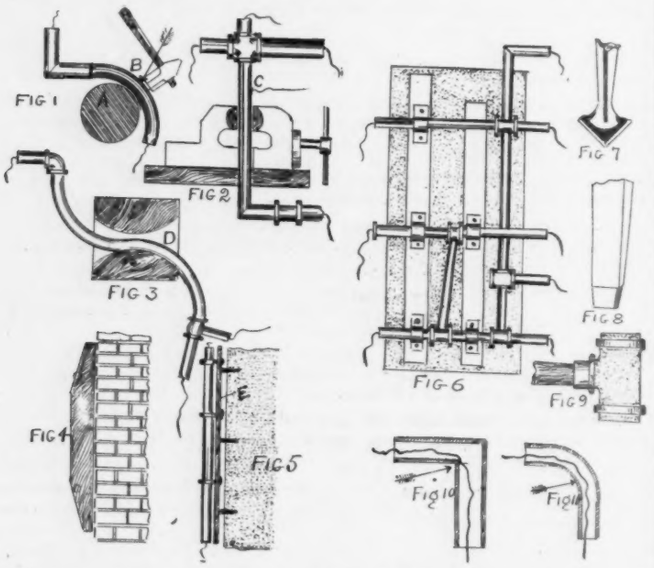
Wisconsin Gas Association.—Annual meeting, May 11 and 12, 1910, Milwaukee, Wis Officers: President, R. B. Brown, Milwaukee, Wis.; Secretary-Treasurer H H Hyde Racine, Wis.

Wiring with Pipes.

[By "Engineer."]

Often the householder demands you to put the lines of electrical wires through the old gas pipes of his building, and while sometimes this method is as good as any, since it saves a lot of tearing out and putting up of fixtures, nevertheless great care must be exercised to make this installation safe. Mill owners frequently specify that the discarded gas pipes of the plant be utilized to convey the new wires from one department to the other, consequently the electrical engineer who follows this line of work frequently is confronted with some odd and often difficult problems of bending and arranging the pipes. Gas pipes in their natural order will not always do, so changes must be made. Frequently the pipes have to be ripped out and curved to suit the needs of the wires, and often it is cheaper to do the work some other way; but the owner, or the man who pays the bill, does not look at it from such standpoint, wherefore you have to please him.

Accordingly I have prescribed some diagrams and operations respecting pipe wiring as shown in the cuts. Fig. 1 displays a handy way to form a pipe in a hurry, especially when there is not much apparatus. The correct way involves filling the pipe with clay or rosin, to preserve walls, or heating it; but with an oval surface to pound on, like *A*, you can deliver light blows with a hammer on a putty packed pipe at *B* and get the desired bend to accommodate the electrical wire, or you can use a vise or other contrivance, rigged with jaws, as in Fig. 2, getting a grip, as shown.



You may have to bore a hole at *C* to let the wire pass; but, even with joints and turns, the pipe can be used advantageously in carrying certain systems of electrical wires. You will find that the hardwood block, in Fig. 3, with its hour-glass opening, is convenient with which to bend pipes in the recess at *D*. The block should be held firmly in the jaws of a vise.

Your piping may have to be shifted, and if you have to attach to a brick wall, use your straight-edge, as in Fig. 4, and if you find that the wall is uneven you may have to strap it. Then pry the mortar from between the bricks where you have to drive in wood plugs and bond your straps to the plugs, having first sawed the plugs off even. Fig. 5 shows a section of a concrete wall. You are up against a concrete wall now-and-then, of which the material is quite ironlike, different from the brick. You need drilling and gouging tools so as to make plug holes for the strap *E*, and to the latter you can adjust the rings for the electrical wire carrying pipe as shown. Fig. 6 is a frontal view of a concrete wall carrying a number of pipes, which pipes have been converted over for conveying electrical wires; Fig. 7 is a tool for drilling into the concrete with ease; Fig. 8 is a chipping and gouging chisel and Fig. 9 shows a hammer useful for this work.

Of course, if you run a line of wire through pipes in which there are sharp edges to the sharp angles, as at the arrow point in Fig. 10, you are going to get your wire cut, worn to the wearing and breaking point in time.

The oval form of turn carries the wire easily and smoothly, as in Fig. 11. The pipes afford a fireproof case in which to carry the wires through wooden floors and walls, are handy in many ways, and offer quite a temptation to the electrician when he gets an order to wire a building. However, many electricians pull all the pipes out and make a new start. Others find that they can use all or part of the pipes for carrying purposes. Much depends upon the conditions.

[Continued from Page 1110.]

PROCEEDINGS, SEVENTEENTH ANNUAL CONVENTION OF THE PACIFIC COAST GAS ASSOCIATION.

Held in San Francisco, Cal., Sept. 21, 22 and 23.

First Day—Afternoon Session.

The Chairman—We will now pass on to the paper by Mr. C. L. Barrett, on

THE PUBLIC'S COMPLAINTS.

Whatever may be the concrete attitude or state of mind of the public toward the lighting company concerning the legitimacy of its methods, the personnel of the company, from its President to its most humble employee, rests secure in the knowledge of the fact that the correct measurement of its product when sold to the consumer is as absolute as can be determined by human means; and in this fact lies the keynote of the uniformly successful argument of its adjuster of supposed overcharges. As a matter of fact, there is no other business so paternally cared for at the present moment, by the State and municipal authorities, as is the sale of gas. The registration of the meter is guaranteed to the consumer by his simply making the request for an examination and test, by the municipal officer appointed for the purpose, and the payment of a trifling fee, which fee is repaid him, together with awarded overcharges covering a certain period of time, provided the meter is found to be registering in the company's favor. The matter of purity and candle power, otherwise quality of the product, has always been provided for in the laws governing gas companies, and of late years municipalities have further incorporated the regulation of price and the requirement of heat units, so it may be said, without fear of contradiction, that there is no other business known so censored in the sale of its goods as is ours, all of which is eminently proper, and nowhere welcomed more warmly than by the gas company's officers, who have to discuss with the public the vagaries of bill fluctuation. Dishonest dealers in almost any of the daily necessities and commodities of life can, if so minded, adjust their measures and adulterate their products or change the price per unit of quantity sold, to suit their fancy, and with little fear of detection; not so the lighting company.

Of all the recurring monthly household indebtednesses the world over that for gas seems to be, to the classes of people who form about 40 per cent. of lhe mass, namely, the careless, the improvident and the unreasoning, a perennial enigma; and this is so from the fact of the daily, momentary, use of trifling quantities of a commodity so intimately connected with daily life that its use becomes absolutely unnoticed or forgotten, until finally when the bill is presented, these minute quantities, which have been insidiously piled up daily, and independently by the many different members of the household, causes the bill payer of the classes mentioned much genuine surprise. The other 60 per cent. of the community, the careful, the watchful, the provident, the reasonable and meter reading classes, never visit the gas company's office except at the commencement and termination of their supply. High bill complaints would seem to the layman extremely diversified in detail; but they really are not. The apparent diversity lies in the viewpoint of the consumer, and his presentation of the facts; the ultimate remedy is the same in all cases, *the meter test made with the standard prover*, done if possible in the presence of the consumer, if not, just as carefully as if he were present. The plan of his being present, however, is always suggested and sometimes insisted upon, or the test not made. Very often effective dealing with cases of high bills consists in merely proving the prior statement reading by one subsequently taken, or by the visit of a trained inspector who should be a good mechanic, of pleasing personality, who understands himself and the situation thoroughly. As the whole matter is really one of fancied error rather than real, the action of this man more often determines the mind of the consumer for satisfaction than even the meter test method; and as it is a

more economical plan of disposing of the question it is cultivated as far as possible. The report form adopted by the San Francisco Company, to be used by its special gas inspector for this class of investigation, which the inspector fills out as he makes his examination and during which he is accompanied by the consumer, if possible, is turned in to the adjusting office and a letter detailing the determined facts invariably sent. The matter upon this form, which may be of interest, is as follows:

SAN FRANCISCO GAS AND ELECTRIC CO.'S SPECIAL INVESTIGATION BLANK.

Gas.

Name .....
Address .....
By whom ordered.....Date ordered.....
Condition of meter.....
Test-out at premises (Determined as a rule by test upon gas appliance burners in conjunction with pressure gauge) .....
Statement of meter..... Number of meter.....
If leakage, state location and amount.....
What is gas used for; number of Welsbach burners; number of other burners; specify gas appliance?.....
Is there a coal range or grate in premises?.....
Is pressure good?.....
Is service clear? .....
Name of person seen at premises.....
Was consumer or his representative satisfied after explanation?.....
Remarks and recommendations after investigation.....

Electric.

Statement of meter.....Number of meter.....
Number of lights used, character.....
Apparent condition.....
Remarks and recommendations after investigation.....
Date of investigation.....Signature of Inspector.....

Should the investigation findings warrant, a new meter is set and a shop test made of the old one, a report of its condition being always sent to the consumer. Meters testing fast are so rare and the percentages so small and the satisfaction to the consumer so great that the company, in making rebates for over registration, does not stand upon its legal rights for a computation upon the bills of the 3 months immediately prior to the test, but includes bills for any reasonable period, occasionally covering 8 or 9 months in point of time.

The foregoing described method of handling the high gas bill complaint applies in a more or less identical way to the handling of the high electric bill complaint, with the exception that the official meter test is made upon the consumer's premises, preferably in his presence or that of his representative. The same care in ascertaining facts and the resultant letter of findings are always adhered to and despatched.

At this juncture it might be pertinent to recall to the minds of those present the unusual public clamor of gas and electric consumers during the winter of 1908, against what was thought to be poor quality of gas, low pressure and exorbitant charges on the part of the San Francisco Company, which culminated finally, after great hostility upon the part of the daily press, in a muchly advertised public hearing before the Artificial Lights Committee of the City Board Supervisors. This hearing was in itself an absurdity, for of the company's 80,000 consumers, just 16 appeared before the Committee to complain, their statements being mere generalizations solely based upon their personal ideas.

Upon the Company's part graphically charted curves of station sendout, temperature and hours of obscured daylight were shown, with the years of 1907 and 1908, arranged comparatively. The causes presented as possible ones at this hearing transpired afterward to be those given by an investigating board appointed by the supervisors, composed of two of the State's foremost engineers, experts upon gas and electrical matters.

The published report of this board was so thorough and fair and educational in its nature that the Company ordered some 30,000 reprints from the original type, and mailed them to that number of its consumers with most gratifying results. As a matter of fact, the investigation was of the most beneficial nature to the Company, proving conclusively the statement advanced in the opening lines of this paper as to the honest methods of gas companies. The more rigid and searching an investigation may be as to false or exhorbitant charges, if made by honest, intelligent investigators, the more the gas companies will court it.

One of the most interesting things developed in this investigation was the contradiction of the popular fallacy that, in using gas for heating at low pressures, several times the quantity would have to be used to produce the same result as gas supplied at higher pressures. Even one of the engineers, who was afterwards engaged in the examination in discussing the matter at the original hearing, so gave it as his opinion. This was by experiment proven to be quite in error, for as a matter of fact it was found to take 18½ per cent. less gas to develop a given amount of heat, at $\frac{5}{16}$ of an inch water pressure, than to attain the same result at 6.1 inches of water pressure; in other words, the consumers in the outlying districts of the city, who had been complaining of little or no pressure, were really saving money in their gas usage, if not in the time occupied in achieving results.

A matter involving considerable difficulty in handling is that of the consumer whose meter has broken down and failed of registration, and who has been presented with an estimated bill, calculated, for the period of non-registration, upon the usage of the newly placed meter. Human nature is the same in gas usage as in the use of other commodities, the more of it gotten for little money the more will be used. Consequently, when the consumer who has gotten accustomed to paying but nominal bills finally gets a true showing, which also includes gas used under wasteful methods, he is somewhat shocked. In the consumer's argument for rebate upon the average charge it is wonderful how invariable is found that of the absence of the whole or part of the family during the period covered by the estimation, and how promptly not only the absentees but additional friends arrive upon the scene the moment the new meter is installed. These cases of average charge are usually compromised by an allowance of greater or less amount.

Adjustments for leakage, where the company is really at fault, are rare, but when the fact that the company is responsible is determined, generous allowances are always made, this being one of the few instances where a basis for allowance is patent, and it enables the adjuster to carry out the company's policy of solving all doubts in favor of the consumer.

Probably the most difficult complaint to adjust is that arising from the transposition of consumers' meters, this being occasionally done inadvertently by our own men, or outside gasfitters, in locations where a number of meters are set together, causing erroneous bills to be rendered. If there is a wide discrepancy in the amounts used, the transposition is quickly detected, but where the usage of the consumers interested is fairly equal it may be a long time before the matter is discovered. When the consumers do ascertain the true state of affairs those who have paid more than the correct charge insist rightly upon its return, but the ones undercharged never can be made to see the justice of a bill for the difference, and almost invariably decline payment upon the ground of supposed legal rights in having receipts covering the period involved.

There has always been in San Francisco, and consequently the condition must pertain in all other cities, two classes of consumers that are oddities in their way; and although, upon first acquaintance, they are surprising and interesting, they become terrific nuisances as time goes on. One of these is the fire-eating-anarchistic, letter-writing, anti-corporation crank, whose screed regarding his bill, be it large or small, shows up at almost exact periods of time, indicating that he cannot stand the mental pressure a moment longer and not explode, and the other the violent monthly kicker against his bills, which are as a rule of ridiculously small amount. These types are the ones who, when it is possible, air their grievances in the daily papers and who are absolutely impossible to satisfy by any treatment whatever, for in capitulating their hobby would be destroyed, and that no man will consent to willingly.

Another type of complainant, who is to be pitied, is the poor, struggling landlady who ekes out a living by renting rooms with gas for stove and lighting use, furnished either gratis, or at a flat rate of small amount, so as to attract or hold the sub-tenant. The result of this bad business judgment always taken advantage of by careless or unprincipled rentors, is visited upon the gas company's adjusting office at more or less regular intervals.

It would seem from all the foregoing that the bill trouble was all the company had to contend with, and that the public had no other complaints. This would be a most happy state of affairs, if true; but unfortunately it is not. San Francisco summer foggy weather is the bane of the gas engineer, for in its immense temperature differences, as between midnight and midday, seems to lie the cause of the formation of the feathery, naphthaline crystal which builds upon the slight protuberances in services and meters, and which in the course

of a short time causes the flow of gas to fail and finally cease altogether. This, together with the usual cases of condensation and leakage and the trouble incidental to overworked mains and services, which all companies experience, approximates from 50 cases a day, in the 4 or 5 rainy months, to from 200 to 600 cases a day during the other months of the year. While this number is but a small percentage of the San Francisco Company's consumers, it makes up a troublesome complaint condition, interferes with shop management, because of its variability, and gives an impression of poor service because it is so generally distributed throughout the mains system. Although the San Francisco Company is blessed with the most capable engineer in the country, and of whom it is said that he can even "Make light of the truth," this pressure question gets so upon his nerves at times that he may be excused for occasionally using that pat ejaculation "The Public be dimmed."

After all, the poor pressure complaint is a blessing in disguise, for it is the best known local indicator of an outgrown distributing system, and upon this indication the engineering department can, by enlargement of mains and services in the locality of the trouble, remedy the defect of chronic low pressure and naphthaline stoppage at that point for a long period of time.

In making complaints, both oral and written, there is often displayed by the consumer much unconscious good nature, curious expression, ridiculous assertion and errors in spelling and diction. Herewith are a few verbatim quotations from letters which are at hand or have been received. The following on leaks, reported upon postal cards, are interesting:

S. F. Gas and Elec Co.: Gentlemen—"I wish that you would send a gas leak at your meter. Respectfully, Mrs. P. C."

From a Chinaman: "Your man must please come fix; have bad gas breath."

Another from a Chinaman: "Please you call fix meter; heap stink."

On gas troubles the following is a gem: "S. F. Gas Co.—My gas meter is out of order; also my neighbor, Mr. Schmidt. Will you please sent somebody to fix them?"

Another upon the same subject from a Chinaman: "Please you call make more gas in meetle, all run out."

From a well meaning and friendly gasfitter during the high bill investigation of last winter, written upon his bill head: "Mr. Barrett, Secy. S. F. Gas and Elec. Co.—Your copy of A. M. Hunt and Cory Engineers received. My experience as a plumber has been that in working around jobbing for 19 years in this city, have found that the consumers' complaint of gas bills and meters has been because men seldom know what they are kicking about. I have been in so many places where vegetables were on cooking and boiled away dry because the women folks had callers and went to the parlors and left the gas on full tilt. Other places I found that in changing pots they will go away and leave burners burning full open while they would get another vessel to put on and sometimes have to clean it, the gas burning in the meantime. I found kettles boiling over and turned these off, as I am a married man and watch these things, but even in my own house I have come home unexpected and found company in the house and gas on four burners and everything going, turned the gas off and in half an hour someone came rushing out. No use fighting a woman, but when gas bill would come in then there would be a howl, want me to raise hell about it and I would raise hell with them instead. I have worked for the Gas Co. in Chicago, Milwaukee, Tacoma and for two here, and I know as I have done so much experimental work that they try and do the right thing."

Some extracts from a copy of a letter sent by its writer to the San Francisco Company, the original of which was sent to the Judge before whom this Company's rate injunction proceedings were being tried:

"Honored Sir: I have paid promptly all of my gas bills at the rate established by the Board of Supervisors of the City and County of San Francisco, and this morning on the advice of counsel have sent them the difference between that rate and the dollar rate. The newspapers said that you would take cognizance of an unconscionable rate.

"While Asst. Engineer of Works at the (blank) Company at Dayton, O., we made representations backed up by estimates, to the gas company there that we could build gas company plant and put the gas into the holder for 25 cents a thousand cubic feet and the gas company knew that our estimates were correct.

"The natural gas company, for it was them that we were dealing with, gave us the gas for 30 cents a thousand. This settles the cost of pumping and distribution. Add to this the 25 cents a thousand the cost in the holder and the cost of the gas delivered, amounts to 55 cents a thousand. Surely your Honor will conceed that 45 cents a thousand or 82 per cent. profit is an unconscionable profit.

"It is quite true that the San Francisco Gas and Electric Company is not making that profit, on account of the earthquake. I have been watching the pumping of the mains ever since the time of the rate discussion and the quantity of water in the mains is fully three times what it should be. It is customary to pump the condensation from the mains, but what I have been watching has been rain water. There is no question as to the difference between gas condensation and rain water leakage. If in wet weather water leaks into the mains, in dry weather the gas leaks out. This accounts for their loss.

"I do not see the justice of paying the gas company for their loss due to the earthquake while others have had to sustain their losses. If their plant has been impaird by the earthquake to such an extent that the leakage explained above makes them unable to furnish gas at the rate established by the Board of Supervisors, why don't they fix their mains?

"In light of the above facts I make this protest against what seems to be an unconscionable rate and ask if there is any relief.—Yours respectfully, ————.

"P. S.—I am son of the (blanks) that built the (blank) Works and am a trained engineer both here and at Glasgow University and am in a position to know what I am talking about."

The following from, probably some odd old gentleman with time on his hands, is curious:

"S. F. Gas & Electric Co.: Gentlemen—Did you ever read Kipling's 'The Light that Failed,' well it's not in it with the story of the lights that fail at Whittens every night. We have Eastern company and they make odious comparisons between what they have and what we get, for the honor of our noble city and state please make a showing and send a man down to pump up our gas.

"I will remember you in my prayers when I say them. Very truly, ————."

On the back of the sheet is the following:

"It is too bad, alack, alas,
The trouble we're having with the gas
You cannot see to read or eat,
In fact I never saw the beat.

"I scarcely know just what to do,
But took a chance at writing you,
In hopes that you would surely try
To make our gas blaze way up high.

"Now Mr. Gas man bring your pump
And cause our light to blaze up high,
And perhaps our bill may take a jump,
But that will never make us cry."

Another from a Chinaman leaves nothing whatever to the imagination:

"San Francisco Gas & Electric Co.: Gentlemen—We have been burning your gas for so many years and that usually to pay the bill from $3 to $5 a month with no excessive. However the bill claims so much in the future two months. It is hardly to satisfactory. We will mail these receipt to you kindly compare it at once whether it's righteous. Answer. Respectfully yours, ————."

A postal probably suggesting defective pressure:

"S. F. Gas & Elec. Co.—Sirs: Please send to (blank) street one box of candles or ½ dozen coal oil lamps or send someone to fix gas so we can find it without the above."

It will be observed from these few quoted extracts that the usual tragedy of the gas trouble man's life is sometimes relieved by a little comedy, bringing out his normal natural cheerfulness, which, if used with the disgruntled consumer, is after all the greatest alleviator of the complaint condition of which we have knowledge.

Discussion.

Mr. Jones I suppose no man in the gas world has had so much experience with the people as my dear, old friend, Mr. C. L. Barrett, and he meets the complainant with a pleasant smile and hand-grasp, and they go away well pleased, even if the bill is too high, and with

a feeling that the gas company is all right. There is one matter, Mr. President, in regard to complaints that I think is quite important, and I would like to impress it upon your minds. Suppose we have a complaint of poor light, an ordinary inefficiency of gas, which may be due to a variety of causes. The complaint is attended to by an ordinary complaint man. It may be his last job on the afternoon rounds. It may have been an accumulation of weeks or months of naphthaline, which has gradually closed up an otherwise sufficiently large service pipe, and in his hurry he does not remove all of the naphthaline. In a few days we get a repetition of the complaint. We have made it a rule in the San Francisco Gas and Electric Company that all repetitions of complaints of poor light go directly to the engineer's office on a slip of paper. The matter is taken out of the hands of the ordinary complaint department and is put in the hands of a special complaint man, or men, who go to the premises If it is found the fault of the workman, it is so reported, and we either get another workman or educate the one at fault. If there is some well defined cause for the complaint, such as a constricted service pipe, a meter set in a cold place, or any of the hundred other causes, no matter what the cause is, we remove the primary cause for complaint. I find by so doing that our complaints, which numbered shortly after the fire as many as 700 or 800 a day, have been gradually diminishing. The workmen pay more attention to the cleaning out of services and to the remedying of complaints, and we find, as I said before, that, no matter what it costs to remove the cause, it is money well invested.

Mr. Lowe—Let me ask Mr. Jones in reference to this question of complaint—of course it is continually bobbing up before all of us. We have been talking a great deat about high pressure gas from time to time, and priding ourselves that most of our troubles are removed by compressed gas. We are beginning to have a few years' experience in that respect. Is there not some one present who can give us the benefit of his experience in that line? Mr. Jones, I know can tell us something about it. Personally, almost all the gas I am delivering is under high pressure, and I must say that we almost have no complaints.

Mr. Jones—I would like very much to speak on that subject, but I fear I would be anticipating Mr. Grover's paper on "Naphthaline Conditions."

The Chairman—We will now have the paper by Mr. R. P. Valentine, on

THE OIL GAS RESIDUAL AND HOW TO HANDLE IT.

A striking thing in connection with the history of the productive industries is the curious fact that the realization of the value of the by-products, and the problem of handling and converting the same, assume importance only at a point where the mother industry has reached a high stage of development. I need only mention such instances as those of the packing houses and the oil refineries, where residual products offer an opportunity for profits almost as great as those accruing from the original product itself. This phenomenon is now manifesting itself in the oil gas industry, though necessarily in a comparatively small degree, and I take this as an indication that the process of oil gas manufacture has reached a state of stability—that it has established its integrity among the industries. I, of course, refer to the production, handling and disposition of lampblack, practically the only by-product from the manufacture of oil gas, and the importance which the problem has recently assumed.

The members will recall that lampblack (as the gas man knows it) is a residue peculiar to the oil gas process. It is only in this process that we meet with the chemical conditions necessary to produce it, namely, a rich hydrocarbon fluid and a heat sufficient to decompose the hydrocarbons. The reclaiming of the by-product and the uses to which it may be put, will be the subject of this paper, although I will devote some space to the problem of cleansing the gas beyond the point where the lampblack is drawn off.

Since the beginning of the oil gas process the scheme for drawing the carbon-bearing water from the washbox to the lampblack separators has been practically the same until very recently. You are all familiar with the open seal pot with its vent into uncovered troughs, through which flows the laden wash water into the separators which have been variously and clumsily devised. With a number of the schemes that have been tried, in the endeavor to construct a good, practical separator, many of you are perhaps more familiar than the writer. You know that overflow pits have been constructed with burlap, excelsior and hay strainers, and all of you have seen the ordinary partition separator, which finally came to be the one most commonly, and perhaps most successfully, used. This separator, as you all know, is the one in most common use to-day. It consists of a huge box sunk in the ground, varying in size according to the output. The box is oblong, with the inflow at one end, so arranged that the flow of water is obstructed by a partition reaching from the top of the box almost to its bottom. The water flows beneath this partition, over two succeeding ones placed some distance apart, and extending from the bottom of the box to within a few inches of the top. A skimmer is usually placed immediately before the third partition, deflecting the water some inches below the overflow; beyond this point the water floods over into the sewer or some other off-take. The dimensions and proportions of the separator will vary under different conditions and with different individuals, but the system is usually the same. The process is successful in robbing the wash-water of a goodly proportion of the lampblack, but the fact remains that it is far from perfect. A large amount of the lampblack is bound to escape, and without a relief box it is impossible to drain off the box in use, while making gas, without allowing the wash-water to flow off uninterrupted.

In connection with this system, the methods heretofore practiced in removing the lampblack from the box have been most unsatisfactory. After draining the box, the lampblack is usually shoveled by hand onto platforms placed at the sides for the purpose, where it is left to drain, and afterwards wheelbarrowed to the fire room. Mechanical devices, such as steam shovels, small tram cars and various kinds of scoops are frequently used, instead of manual labor and shovels; but in any case the job is slow and expensive and eminently unsatisfactory.

Following the natural course of events, any imperfect process will seek to right itself in time. In the particular case under discussion, an improvement has finally worked itself out, which is rapidly displacing the old process in many localities, and which will, I doubt not, eventually become adopted by every progressive oil gas plant. The scheme which I have in mind may briefly be described as follows:

Abandoning the old seal-pot, we now run the waste water from the washbox in a pipe dropping from the overflow into a trench, which carries it underground to a point at the head of a platform, about 4 feet in height, whence the pipe rises flush with the top, where it is crowned with an elbow, through which the water flows out upon the platform. It will be seen that the pipe, when laid in this manner, forms a trap which effectively serves as a seal, and it is readily kept clean by turning the blow-off from the boilers into it. The platform which I have mentioned is the separator. It is rectangular, and, let us say, 10 feet by 40 feet. It it perfectly level with sides, rising 16 inches above the floor, while 12 and 24 inches, respectively, from the end opposite to the flood-pipe are partitions extending to within 1 inch of the bottom. These partitions, placed so close together, form a sort of a box, which is stuffed with excelsior, or some similar material. We will now suppose the separator to be in operation. The water laden with lampblack flows from the pipe onto the platform, where it spreads out thinly over the floor, depositing most of its lampblack evenly over the surface. The aperture beneath the excelsior-stuffed box is just large enough to prevent the accumulation of the water, and, as it seeps through, the excelsior serves as a strainer, removing practically all of the remaining lampblack from the water. But to make assurance doubly sure the process is continued. After seeping through the excelsior, the water drains off into a trough extending lengthwise at the side of the separator, from which it flows into one of the old-style separators arranged with the partitions running lengthwise. The water is now almost unnecessarily put through the old separating process, from which point a sufficient amount of the water to operate the first scrubber is returned to that machine, preferably by means of a centrifugal pump, and the remainder is drained off into reservoirs, whence it is pumped into the general water distribution system for the apparatus. The reason for using the warm separator water in the first scrubber I will describe in a succeeding paragraph.

For efficiency the process which I have described is far superior to any arrangement which has preceded it. So thoroughly is the water cleansed of lampblack that it can be used over-and-over again; but there is one other advantage to the system, which is perhaps as important as all others combined—I refer to the labor saving device used in connection with the separator for the purpose of removing the lampblack. You will recall that the floor of the separator is surrounded by 16-inch sides. I will now add that the end nearest the inflow pipe is removable, and the pipe itself is arranged so that it can be swung back. A large scraper, of a breadth equal to that of the floor of the separator, is held in suspension on four wheels resting on iron railings placed on the sides. This scraper can be lowered

upon the floor of the box, and is operated by means of a chain, running through the necessary pulleys, to a convenient engine shaft or other revolving mechanical device, around which the loose end of the chain is wrapped. By drawing this loose and taut the scraper will be drawn forward. In this manner the separator is relieved of the accumulated lampblack, which is scraped out upon draining shelves and thence thrown upon the floor of the boiler room. This scheme does away with practically all the expense and inconvenience necessary to the old method of removing the lampblack by hand.

At this point I wish to digress for a few moments to discuss what I consider the best and most effective means for cleansing the gas. I will state, at the outset, that I am in favor of four vertical scrubbers, into which large quantities of water are sprayed at the top, three of them serving to wash the gas before it reaches the purifiers, and one operating between the purifiers and the receiving holder. To remove the heavy tar from the gas the first two scrubbers should entirely suffice. These scrubbers should be constructed internally of gratings made of 1-inch by 6-inch boards, 1½ inches apart, arranged alternately right and left. I am thoroughly convinced that this style of scrubber is most efficient for the first part of the cleaning process, not only because its arrangement is best suited to the work of removing the particles of tar, but because it permits of a free precipitation of these particles to the bottom of the scrubber, which can be steamed out daily.

It is in the first of these scrubbers that I recommend the use of water returned from the separator. This is hot water, somewhat over 100°, and because of this fact its use in the scrubber will prevent any hardening or over stiffening of the precipitated tar, the result being a more rapid and thorough cleaning when the scrubber is steamed. Those who are familiar with the difficulties that so often arise, as a result of a glueing up of the lower grating, will appreciate the advantage of this proposal.

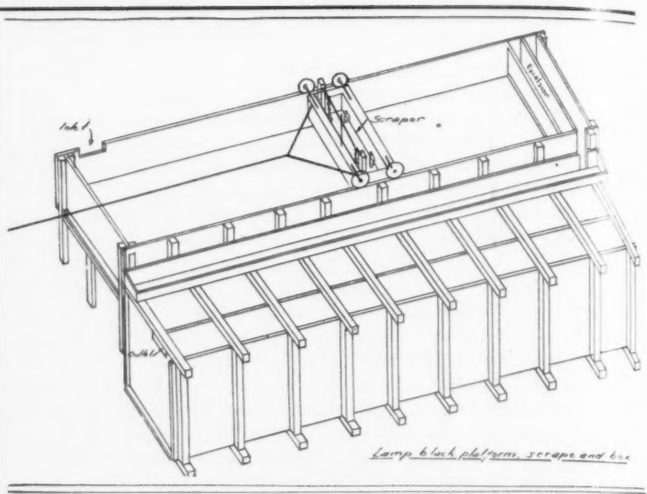
On the subject of the waste water from this first scrubber I have another suggestion to offer. This water contains considerable tar that might better be dumped out on the lampblack separator than disposed of in any other manner. If lampblack and tar are used directly for fuel, as is usually the case, why not mix them in this manner? And if, as is sometimes done, the lampblack is briquetted, a certain amount of tar will facilitate the process. It is for these reasons that I recommend running the water from the first scrubber through the separator, and as for getting the water there, what is so simple as to connect on to the overflow pipe from the washbox, using the same inclosed seal? If no other advantage is gained, we shall at least avoid the nuisance of an open seal on this scrubber.

The third scrubber, which should carry the washing process up to the purifiers, must, I strongly urge, be filled with round cobble stones. The more thorough work necessary in this scrubber, in order to remove the finer particles, requires a tortuous passage of the gas through the water, but at the same time a filling must be used that will allow of the settling of the substance removed. It is with these requirements in mind that I recommend cobble stones above any other filling of which I know.

The fourth scrubber, which, as I said, should be placed between the purifiers and the receiving holder, is for the sole purpose of removing from the gas whatever dust particles might have been picked up during the passage of the gas through the purifying material. It is my confident belief that a great proportion of the trouble in services and burners that has usually been attributed to naphthaline and tar, is in reality due to dust accumulated by the gas in passing through the purifiers, and to remove this the post purifier scrubber is, to my mind, essential; and, as regards construction, I can recommend no better scheme than a series of baffling plates, for by such an arrangement the gas is thoroughly rinsed.

In this connection I might add that, just as in the case of the separator, where there should be no loss of water except by evaporation and seepage into the lampblack, so here there should be practically no loss. The water from the scrubbers (except the first) should be run through a tar well, overflowing into reservoirs where the bulk of the water from the separator is stored. It is this conservation of the water to which I wish to call special attention, as it is a matter that has heretofore been much neglected in the gas making process, notwithstanding the opportunity it offers for a very considerable economy.

In concluding the paper, I wish to say a few words about the disposal of the by-product, lampblack. I am willing to make the broad statement that the usual way of disposing of this residual is a mistake and an extravagance. I refer to the use of the lampblack under the



boilers for fuel. My contention is that there is a market for lampblack in many forms, only waiting to be exploited to yield a return far in excess of the cost of any substitute fuel that might be used in the gas making process. Many of you are familiar with the scheme of briquetting the lampblack, an idea that has long since not only demonstrated its practicability, but has been commercially applied. I have in mind one company that has for over 2 years briquetted its lampblack and sold it at a price of $14 a ton, a very remunerative return; and I will add that it has a demand for every pound it can turn out.

Another example that comes to my mind is the fact that briquetted lampblack has been successfully used in the manufacture of water gas, having undergone tests in this application that show it the equal, if not the superior, of Welsh anthracite coal. But in addition to the briquettes, think of the other merchantable commodities that might conceivably be made from this substance. Such articles as arc light and electric battery carbons, coke paint, pencils, come to my mind, and I doubt not that a great variety of serviceable and salable goods can be produced from it, if only sufficient time and thought were given to the matter. I repeat that it is a mistake and an extravagance to use this valuable residual under the boilers, and that the gas man of the future, coming to realize its possibilities, will devote his energies to opening up this market, with no mean profit to himself.

Discussion.

The Chairman—Gentlemen, I would like to hear a very full discussion of this very interesting paper by Mr. Valentine. I believe we are all oil gas men here, and nothing else is a more important factor in the way of manufacture than the disposition of the lampblack or carbon. You who have had experience in its handling should be very glad to express your views fully. Mr. Berkeley, you have had some experience in that direction.

Mr. Berkeley—I enjoyed Mr. Valentine's paper very much, because I like originality above everything else. I am a firm believer in getting all we should get out of it. I am very willing to confess I don't know how to do any more than we are doing at the present time. I believe that, with each unit of oil gas apparatus, there should be built a unit to consume the carbon into water gas, so that you would immediately transform your carbon into a product for which there is a market. Otherwise, the accumulation of it is an expense; and, unless it can be moved promptly, it soon becomes a very troublesome thing.

Mr. Cline—Regarding the use of carbon in water gas manufacture, the Los Angeles Gas and Electric Corporation for several years has been making from ½ to 1½ million cubic feet a day, using the bricks and the carbon very successfully. During the summer we take the lumps right out of the pile, sun-dried, during the winter we use the brick. The balance of it is briquetted and sold for consumption as domestic fuel.

Mr. Hill—Do you use lampblack under the boilers?

Mr. Cline—Very little; just enough to keep the pile down.

Mr. Hill—Do you use all that is necessary to furnish all the steam for the gas plant?

Mr. Cline—First we use all we require to supply the capacity of our water gas plant, and then as much as there is a sale for is used for domestic fuel. The balance of it we use under the broilers.

Mr. Hill—What I was trying to get at, your experience as to the proportion over and above that necessary to furnish steam in the

manufacture of ordinary crude oil gas. Do you find that you have a surplus?

Mr. Cline—A very large surplus.

Mr. Hill—After you have used all that is necessary to make all the steam?

Mr. Cline—We can make all the steam necessary and have a very large surplus.

Mr. Hill—What is the character of oil you use?

The Chairman—About 16 to 18, or even heavier than that. Probably, 14 to 17.

Mr. Hill—Our experience with oil of a gravity between 18 and 20 is that, after we have used that portion of the lampblack necessary to make steam in our gas plant, very little is left. In other words, it takes nearly all the lampblack made in our plant to keep up steam.

Mr. Cline—Of course, I suppose that would follow in a small plant, but in a large plant it is another proposition.

Mr. Jones—What is your substitute fuel under the boiler?

Mr. Cline—We use crude oil of about 14 gravity.

Mr. Valentine—As to Mr. Hill's remarks, my idea is in a small works properly constructed with a separator such as I have described, you will get all the lampblack there is, and when the proper heat is carried in the generators, you will produce lampblack enough to make all the steam required.

Mr. Hill—We do that. We used all that is necessary to generate all the steam, and we then have very little left over.

Mr. Valentine—The point I wanted to impress more particularly in my favor, is that we are very extravagant in using lampblack for fuel. The time is coming when we shall have a good market for every pound of it, and possibly it will be more valuable than the gas we sell.

Mr. Lowe—What you are trying to urge is that we are using a material too valuable as boiler fuel.

Mr. Valentine—Yes.

Mr. Lowe—There is no question about that, but I think it will be many years before the little fellow with a very small output will do anything. It will not pay him to get rid of lampblack, except he may save it and sell it to somebody else who can convert it into other forms.

Mr. Valentine—He is too far from the market.

Mr. Lowe—There is one thing not generally understood. As a builder of gas works I have had the question put to me many times, "Why is it that large plants have so much more lampblack than they require, while little plants don't have enough?" It is the old question of the inefficiency of the small plant. Another point: When a gas works' builder builds gas making apparatus, he puts in a boiler of sufficient size to run the apparatus. Now the gas maker subsequently adds a pump, then possibly a compressor or anything that comes along, and keeps piling the work on a boiler that was intended to do nothing else than provide steam for the gas making apparatus. He gets the extra steam, but at the expense of very inefficient fuel consumption.

Mr. Valentine—I think the tendency all the way through is to put in too small apparatus in the first place.

Mr. Lowe—There is no doubt about that, but the content of the man's purse is unfortunately too small. When a gas works is originally built it is usually a very small one, and one of the most inefficient units in the world is a small steam boiler. Again, very few know how to fire lampblack scientifically. I am not speaking individually, but generally, of the men who fire the boilers. Any of you might do it all right, but we don't pay our firemen $250 a month. In fact, we pay them $65, and try to reduce that figure. If we can, we get it down to $2 a day, and therein is your trouble. I am now right up against this proposition myself. In the works at Tonopah we put in a little 25-horse power boiler, because it was then large enough, but we need a 75 now. How much better it would have been had we put in a large one in the first place. I made the mistake myself, and you all make it; and, what is more, you will all keep right on making it, because you feel you have not got money enough in the first place, and you can't subsequently take out the small ones, because your owners won't let you.

Mr. Jones—I don't think Mr. Lowe is fair in blaming himself in that way. I don't think any man on earth could have anticipated the growth of the gas business in Central California. The sizes of the units have more than doubled. Nobody could have anticipated the immense growth of the business. One matter I would like to mention is the mixture of fuels, which has been employed in some works, and which it seems to me is fatal to efficiency. I have always contended that a man should not mix fuels of any two kinds or more than two kinds. That is, I find it is not even an advantage to mix coal and coke, or different kinds of coal, but when it comes to the burning of oil, spread in over a bed of lampblack, practically the oil acts as a fire extinguisher. Let us take, for instance, the conditions existing in a boiler furnace. We have set bars on which we put lampblack, which is carbon. That carbon to be burned, to produce heat, combines with the oxygen of the air, and the product of combustion is carbonic acid gas, which we all know is a non-combustible gas, and is a good fire extinguisher. The other gas, going along with the carbonic acid gas, is nitrogen, which is also inert, and which is the natural result of combustion, being separated from its oxygen in the air. Now then, if we have performed certain results with lampblack burning with air passing through it, we have above that bed of lampblack an atmosphere of carbonic acid gas and nitrogen, and why should we inject into these non-combustible gasses an oil in vapor or liquid form and expect it to burn? I would recommend, instead of trying to do that, that a man use lampblack under the boiler as long as it lasts, and when his lampblack is gone, he should make use of the oil exclusively, piling up the lampblack in some corner, letting it dry, until he gets a sufficient qnantity to fire his boiler for a week or a month, or a longer time, according to his judgment.

Mr. E. C. Jones—Do you use lampblack under one boiler and oil under another, or do you change from lampblack to oil?

Mr. Cline—I could not answer that question directly. We have a large battery of boilers, something like 10 or 12. I think what is used principally under our boilers is the product from the scrubbers.

Mr. E. C. Jones—Your conditions in the South are somewhat different from those in the North, inasmuch as you have developed a market for lampblack, and you receive enough for lampblack briquettes to warrant you in using oil under your boilers. We cannot do that in Northern California, because there has been no market developed here amounting to more than $2.75 per ton for ordinary dried lampblack. We have never attempted to sell briquetted lampblack, and oil is worth more than that per ton.

Mr. Hill—What is your experience in regard to the use of the lampblack; that is, as to just how well it dries? Does wet lampblack burn best, or the dry, for use under the boiler to make steam?

Mr. Jones—I will answer that question. At one time a large surplus of lampblack, at our Oakland station, piled up, which became a nuisance, and after considerable prayer and begging the electric department offered to use some of it under their boilers. I took great pains to give them the driest lampblack we had. One day, finding a man playing a hose on a pile of lampblack, I said, "What are you doing that for?" He replied, "It burns much better when it is wet." So I stopped drying it. I found that lampblack containing 30 per cent. of water is an excellent fuel to burn under the boiler.

Mr. Hill—That has been the experience at my plant. We had an accumulation of about 300 tons of lampblack at Monterey, which had been accumulating for 1½ or 2 years. They had made no effort to burn it. We fitted one of the boilers in the gas plant so that the lampblack could be burned, and in the course of time the pile disappeared. We finally got down to wet lampblack, then I said to our foreman, "What will we do?" His reply was, "We will have to shut down and let that dry." I said, "Haul it right in, it burns better wet than it does dry." With a good deal of persuasion and a lot of coercion, I managed to keep the men at it; but it is still a question with one or two of our men as to whether it burns better dry than wet. I wonder whether any of our other members have had a like experience. As a matter of fact we find in the Salinas plant, where they have been burning it wet, it is taken out of the separator, and they discovered that the water that brought the lampblack to the separator seems to carry a little naphthaline and other residuals with it; that even the lampblack burns better taken right out of the separator than dry lampblack. We are doing that now.

Mr. Rix—Much expense and labor could be saved in the firing of boilers with lampblack by the employing of marine firemen. I find by observation that the firemen in different plants are known as the stationary type of firemen, and that in firing lampblack they don't give it the care and attention they should. Whereas, when the marine fireman is on the ocean, and the coal is bad, he can't throw down his shovel and say, Well, we will let it go." He has to fire. It is the same way with marine firemen when put to firing lampblack. They study it, and in that way, I think, you obtain better results.

Mr. Cline—I don't believe the value of this carbon or lampblack is appreciated, or hardly any of the companies have fully worked the

thing up to its most valuable commercial stage. I am told that the coal company we are selling the carbon briquettes to in Los Angeles gets $9 a ton delivered. That is a very good price, one which is equal to about that of coal, or very little less. In time they will get just as much as they can get for a ton of fairly good coal. On that basis yon couldn't afford to use carbon under the boilers.

Mr. Valentine—In addition to the paper, I desire to state I have recently completed another shaped platform by which, when they scrape the lampblack off the platform, it flows in front of the boiler, so there is no shovelling excepting from in front of the boiler to the furnace. Regarding the making of briquettes, it seems to me a platform elevator could be connected, by means of ducts, so as to carry the lampblack immediately to the briquetting machine without manual labor.

Mr. Lowe—I wish to make a little prediction on the ultimate use of lampblack. I don't know how long it will take to come about, but you will all be one day converting it into coke, not into briquettes, and the coke will be a very excellent product, about 99.90 per cent. pure carbon, and which you will be selling for the manufacture of electrodes or other articles requiring a very pure form of carbon. It takes time to reach these flights, but many minds have been working on the ultimate use of this lampblack. Our industries unfortunately develop by evolution not revolution, otherwise none of you would be using lampblack to-day other than for the manufacture of the best kind and purest form of carbon next to the diamond. You don't yet realize its possibilities, but in time you will know more of it.

Mr. Kuster—Another question that occurred to me was the arrangement of the scrubbers. It looks to me the natural thing for a man to do, who had as much trouble with the first and second scrubbers as he probably has, would be to just reverse the arrangement and have the first and second scrubbers, the baffle plates, and the trays in the third and fourth. I would like his reason for that.

Mr. Valentine—My reason for providing for the trays in the first scrubber is to break up the gas into as small particles as possible, so as to separate every particle of the gas. If you use baffle plates as the first scrubber, I am strongly of the opinion the tar would be liable to clog along the edges of the plates, forcing the water to pass in a solid stream at one side or the other and thus allow the gas to by-pass. My object in using the baffle plates beyond the purifiers is that there would be no solid matter there; that when the gas passes through the water, as it flows from plate to plate, it turns the water into a vapor. As I expressed it there (I think I used the word very nicely) I rinse the gas. We wring every particle of foreign matter out of it.

Mr. Vance—I would like to ask how many pounds of dry carbon do you get to each 1,000 cubic feet of gas?

Mr. Jones—We have reduced the amount now to 20 pounds. In the beginning of oil gas manufacture we made as much as 30 pounds or over, but by changes in the process we have reduced it to about 20 pounds.

Mr. Cline—How many gallons of oil per 1,000?

Mr. Jones—Calculating 9 gallons?

Mr. Lowe—Including the tar?

Mr. Jones—Including everything. We don't separate the tar. We have 20 pounds of residual. There is very little tar. The latter flows with the waste water and lampblack from the scrubbers and from the wash box into the separators. It adds to the fuel value of the lampblack, acting as a binder for the briquettes.

Mr. Lowe—Has any member had trouble in cleaning his scrubbers? Do they stick up with tar or give trouble at all?

Mr. Hargreaves—In San Jose we have two plate scrubbers that take the crude gas first, and they are very efficient. We have not had much trouble with them. I think that really the first part of the gas should go through baffle plate, then through the tray scrubbers, if it is necessary to scrub further.

Mr. Lowe—What do you mean by baffle plates?

Mr. Hargreaves—The trays, and so on all the way down.

Mr. Lowe—The alternating system?

Mr. Hargreaves—Yes, sir.

Mr. Lowe—Not the waving baffle plates?

Mr. Hargreaves—No, sir.

Mr. Hill—We are having all kinds of trouble.

Mr. Lowe—Then turn the blow-off of your boiler into the top of your scrubber and you will get rid of it. I wouldn't have allowed any of our gas makers to do it at one time, but I now find it a very efficient way. We don't pay any more attention to clogged scrubbers, other than to turn the blow-off of the boiler into the set. There seems to be no more trouble when that is done.

Mr. Valentine—As to the plugging up of scrubbers, perhaps I am making a broad statement when I say such a thing never should occur; that we should so make our gas as to have practically no tar in it. At the same time, the heat in our machines should not be high enough to make naphthaline. By doing that, with plenty of water in the scrubber, there is no excuse at all for plugging up.

Mr. Lowe—If you run your apparatus with heat sufficiently low to keep entirely down the naphthaline trouble, I would not like to pay your oil bills. You can overcome your naphthaline trouble more or less with low heats, but it requires a high degree of heat if one is going to make oil gas economically. Our crude oil is far too valuable to remain as low in cost as at present, it is going to climb, while the gas selling price cannot climb, as city authorities are not going to allow it, at least, to any great extent. You must, therefore, find some other substance for making gas, and it will probably be one that is unknown in gas manufacture to-day. I refer to the form of so-called oil which is almost too thick and heavy to be pumped. Its gravity cannot be measured in liquid form, but that is the material you will sooner or later be converting into gas. To do so will require a higher degree of heat than now, hence more trouble to overcome in the way of naphthaline.

Mr. Jones—A word about scrubbers. There is an excellent reason why baffle plate scrubbers give no trouble; because they do little work. If a man would save the money of putting in baffle plate scrubbers and extend his take-off pipe, he would get about as much efficiency out of it. Back in 1879, when I thought I knew a great deal about the gas business, I discovered in a scientific book a picture of a still for the manufacture of sulphuric acid, and I got up a beautiful gas scrubber, consisting of inclined trays with perfectly straight edges, for the imaginary flow of waterfall over the edge, perfectly true from side to side. The gas inlet was at the bottom, and the gas passed up through these various waterfalls and was supposed to be thoroughly cleansed; but it did not work. The water would go down one side of that infernal thing, and the gas would go up the other. But I didn't have any trouble from it. Now the man who has trouble with a well-built scrubber needs something for his liver. He wants to be stirred up. When in San Francisco 18 years I used one type of scrubber, consisting of wooden trays, made of carefully surfaced pine lumber, nailed together with spacing places so as to form grids placed at right angles to each other in alternate layers. The trays are made smaller than the diameter of the shell to facilitate putting them in place and removing them. The space betweeu the steel shell and the wooden trays is carefully caulked with excelsior in order to prevent the by-passing of gas. The gas must go up through the trays and the water passes through them. There is no better or cheaper form of scrubber, and if it stops up it is due to negligence or ignorance. In 18 years in San Francisco I have never seen a wooden tray taken out of a scrubber with either oil gas, coal gas or water gas; but I have known of its having been done in other places. Therefore, if we have a good scrubber, which is the cheapest kind of scrubber, why don't we take care of it rather than adopt some other plan of scrubber of which we know nothing? If we take the trouble to look back to Clegg, Accum, Murdock, and then look at the pictures in the books back in 1818 and 1819, and observe the forms of apparatus used in England at that time, we will find that some of us are trying to readopt the earlier forms of gas making apparatus.

The Chairman—As this discussion seems closed, we will now listen to the paper by Mr. John P. Coghlan, on

DAMAGE CLAIMS: A MODERN VIEW.

[For the Coghlan paper, see *ante*, October 4, p. 812.]

Discussion.

The Chairman—Are we to have any remarks on Mr. Coghlan's excellent paper? It handles something that we all encounter once in a while—that is, injuries to employees. Mr. Coghlan has covered the ground very fully.

Mr. Lowe—Has Mr. Coghlan any suggestion to offer which would be of advantage to small gas companies.

Mr. Coghlan—No; none in particular. My idea is that the employers should study this question and inform themselves, because I think the conditions in this State are such it would be difficult for a small employer to adopt the plan, in that, as the law stands, the individual has a right to bring his action for damages, and if he were compensated, the employer would have no definite security against the bringing of another suit thereafter. In other words, he might

accept the compensation under a plan of this kind, and afterwards repudiate it and bring a suit. He would have a perfect right to do it. All the small employer can do is to keep informed and prepare himself, so that when the matter does come before our legislature he will be prepared to take his part in shaping legislation, not in obstructing it, not in attempting to change it, but in making it just to both the workmen and the employer. The expense will come from the industry. As the employer gets it now, it is taking away so much of his profits. Once the matter is scientifically arranged, as it is in Germany, it will be taken out of the industry as an extra hazard. The system as developed in Germany practically covers every man in any employment. The only limitation is upon a man who earns less than $480—about 2,000 marks; and it has come in Germany at the time of the greatest commercial development in that country, for in the last 3 years Germany has advanced commercially beyond any other country in Europe. This matter of damages has kept pace with that development. The Government has taken it up as to service in the navy yards and arsenals. It is only a matter of time when it will be adopted in this country, and the main question will be, was the man injured in this employment, and, if so injured, of what did his injury consist. In England, in 1897, they attempted to limit it to quarries, railroads and industries of that kind. In 1900 and 1906 they amended it so as to take in all sorts of employments. In this country now our only defenses have been, so far as the employees are concerned, the fellow servants and the risk of the calling. Those matters are cut out entirely. The Code section is so amended here that there is little left of it. The question of contributory negligence still remains. Of course, that is the great defense to-day, but as concerns the employee it has been modified by court decisions all the time. In Massachusetts it is a matter which must be submitted to the jury. It is not decided there any longer by the court. The matter here goes to the court entirely, but in Massachusetts it is submitted to the jury.

Mr. Lowe—It is merely a question of setting aside an insurance reserve.

Mr. Coghlan—Yes; the scientific way is to establish the fund by employer and employee.

Mr. Lowe—And that ultimately reaches back to the consumer?

Mr. Coghlan—Yes; he pays it. It is a question of whether or not anybody is liable. It is a question was the man injured in the industry? If he was, the industry must pay for it.

On motion, the Chairman declaired the convention adjourned until the following morning.

(To be Continued.)

Supports for Gas Arc Lamps.

[Communicated by "R."]

The accompanying illustrations show some of the methods employed by gas companies for supporting street gas arc lamps in towns and villages in which facilities of this kind are poor. A great many of the smaller towns that for years have depended upon other forms of street lighting, have taken up with modern gas arc lamps, as is well known to the gas engineering business. Many of the towns are not properly equipped with the necessary supporting props to carry the wires and lamps, and the result is that some ingenious contrivances are adopted.

Sometimes we find that the contractor who takes the work to light the town has resorted to using the trees, as shown in Fig. 1. The using of trees for supporting wires or lamp brackets is discouraged n some places, for the average tree sways to-and-fro in the wind, oftentimes disturbing the balance of the lamp. Again, often the trees do not come in at the proper intervals. Still further, the townspeople frequently object to disfiguring the tree with lamp supporting devices—and this objection seems to carry the greatest weight of hose that have been offered.

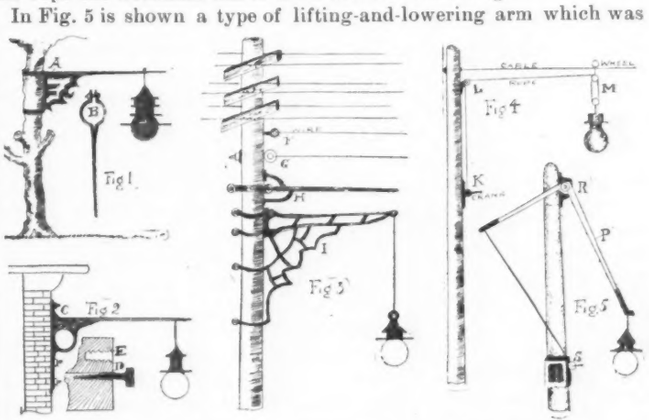
Lamps have been shaken down from their supports on the trees and broken. But trees have been used for this purpose and will be used again. The illustration referred to shows one mode of attachment. A plain projection can be extended from one tree to the other and the lamp hung to this wire. Again, the metal bracket system is popular. The metal bracket can be made ornamental. It may be of iron or imitation bronze, and it can be securely joined to the tree by means of clamping bolt rings, as at *A*.

The diagram *B* shows a top view, and explains the mode of bolting the divided portions composing the ring. Then, again, one may see the gas arc lamps fixed in position by the employment of supports set-screwed to the wall of a building, as shown at *C*, Fig. 2. The metal arm is bolted to the brickwork.

Building owners frequently object to having the gas companies put up lamps and supports on their buildings and sometimes a payment is demanded before the owner will permit the hangers to be attached. Then, again, some building owners do not care and give permission gratis. I have seen brick walls torn by the connecting devices. If set or lag-screws are driven into the mortar between the bricks the chances are that the pins thus driven will pull out under strain. To avert this danger the hole may be cut for the pin and then tapped with a thread, as at *E*. Then the lag-screw may be turned into this recess. If you simply drive the pin, as at *D*, the pin will pull every time. You can find quite a variety of gas arc street lamp supports in the average town where the streets are illuminated with gas. It is not uncommon to utilize the telegraph and telephone wire poles. Usually an arrangement is made with the telegraph company for this purpose. The wires overhead are not interfered with. You will find a gas arc supporting wire connected in the poor manner shown at *F*, Fig. 3. This consists in driving or turning a ring bolt into the pole as shown; but such bolts may pull out and let the lamp fall to the street. A better way is to use a ring bolt that passes through the pole, as at *G*. The nut on the inside prevents the bolt from pulling through.

A form of supporting arm is shown at *H*. When an artistically designed supporting arm is desired, a brace, like that at *I*, is used. Some of the gas companies that supply gas arcs in the small towns are compelled to have the crank device up high enough from the ground to prevent interference from small boys. In a certain town the lamps are raised and lowered by means of a small tackle, *M*, Fig. 4. The rope goes to the guide wheel, *L*, and thence to the crank wheel for winding, at *K*, In order to get to the crank to manipulate the rope the workman has to use a ladder 10 feet long.

In Fig. 5 is shown a type of lifting-and-lowering arm which was



recently seen by the writer. The center of the bearing of the arm is pivoted on a stud, at *R*. The stud is fixed in the casting which supports it, and the casting is bolted to the top of the concrete pole. The long arm *P* carries the lamp. The short arm is fixed to the rope, which is wound about the drum at *S*. The arc is readily operated by the turning of the drum by the crank. When the lamps are supplied by gas the pipes are carried along the arms from the poles in the usual way. If gasoline is used the vapors are usually made in the lamp by heating the gasoline supply in the tank of the lamp. I found that some of the towns used lamps that drew the supply through slender metal tubing from a tank set near the pole. The business of lighting the streets of the small towns with gas arcs is rapidly developing and there is more money in the business than formerly. Indeed, many small towns are simply waiting for representatives of the gas companies to appear and canvass the section.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 10 cents.

938,601. Needle valve. Joseph Maas, Kalamazoo, Mich., assignor to American Gas Light Company, same place.

938,602. Incandescent gas lamp. Joseph Maas, Kalamazoo, Mich, assignor to American Gas Light Company, same place.

938,691. Peat gas plant. Jean D. Oligny, Montreal, Canada, assignor to Peat Gas and Coal Company, same place.

938,745. Gas burner. Ward F. Cobedesh, Salem, O.

938,919. Method of manufacturing gas. C. B. Tully, Wood Green, London, England.

939,137. Incandescent lamp burner. A. A. Jahnke, San Francisco, Cal., assignor, by mesne assignments, to Incandescent Oil Lamp Company, same place.

939,242. Gas burner. B. A. Geurink, East Cleveland, O., assignor to the Trenkamp Stove and Manufacturing Company, Cleveland, O.

939,363. Self-closing gas burner. C. A. Johnson, Tolar, N. M., assignor of one-fifth to J. T. Coleman, same place.

939,282. Apparatus for manufacturing gas. B. Loomis, Hartford, Conn.

939,288. Gas producer. G. L. Morton, Four Oaks, Sutton Coldfield, England.

939,415. Gas or oil burner. O. J. Heindel, Kansas City, Mo.

939,675. Automatic oiling device for gas meter diaphragms. J. R. Daly, New Orleans, La., assignor to J. E. Cross, Baltimore, Md.

939,684. Gas regulator. M. Graetz, Berlin, Germany.

939,790. Automatic lighting and extinguishing device. A. J. Bedford, Melbourne, Victoria, Australia.

Items of Interest
FROM VARIOUS LOCALITIES.

THE Petworth Citizens Association has petitioned the Washington (D. C.) Gas Light Company to extend its main pipes from Georgia avenue to the District line. This will mean an expenditure of several thousand dollars, and no guarantee goes with the petition that, the pipes having been so run, the authorities will next be appealed to for an order requiring the Company to forthwith reduce its selling rates. Judging from the way in which Mr. Hart, as Manager of the Company, looks at these petitions—and Mr. Hart is a hard-headed, wise-acting business man—some sort of a guarantee as to price and quantity of consumptiou will have to be given before the Petworth ring of real estate speculators will succeed in securing the prayed for extensions.

"MR. M. WEBB OFFUTT, whose appointment as Manager of the Schenectady Illuminating Company was recently noticed in your columns, was officially received in good style, in the offices of the Company in the Parker building, the evening of the 10th inst., by the department heads and other employees of the Company. Mr. L. O. Ripley, the retiring Manager, officially welcomed Mr. Offutt, and in recounting the success which the Company had gained in the past 6 years, admitted that that excellent record could not have been made were it not for the unity of purpose shown by the employees. He predicted that like advances could be recorded under the dominion of Mr. Offutt if he received like royal and loyal support, which he was sure whould be cheerfully given. Mr. Offutt has been Manager of the Mohawk Gas Company, and hereafter he will be in charge of both, through a combination of each.—A. V. S."

THE general offices of the Peoples Gas Company, of Manchester, N. H., were badly damaged by fire the morning of the 15th inst. The spreading of the flames to the adjoining structures caused the fire to be quite an expensive one. Some estimates placing the total damage at $25,000.

THE New York *Commercial*, of recent date, respecting the repayments made by the different Gas Companies of this city (former New York) on account of the 80-cent gas rate law, had this to say: More than $8,000,000 has been paid back to consumers by John A. Shields, United States Commissioner, acting as Special Master in the matter of the refunding of gas overcharges. Mr. Shields has submitted a report to the United States Court showing the amounts received from the various Gas Companies affected by the 80-cent gas law decision and how these sums were disbursed. The court fund, which had been turned over by the Companies, amounted to $8,853,545.20, the following amounts being received: Consolidated, $4,823,485.68; Standard, $986,386.74; New York Mutual, $846,978.54; Central Union, $711,147.38; New Amsterdam, $1,206,158.12, and the Northern Union, $279,388.74. Of the fund received by the court, $8,150,943.44 has been repaid to consumers, the amounts being: Consolidated, $4,384,089.01; Standard, $933,117.88; New York Mutual, $794,702.94; Central Union, $669,818.56; New Amsterdam, $1,102,408.88, and the Northern Union, $266,806.17. Many checks were sent out by Mr. Shields to consumers who have not been found, and the checks were returned through the post office. This amounted to $302,405.50, which included the following amounts: From the Consolidated, $151,810.18; Standard, $30,245.32; New York Mutual, $40,297,52; Central Union, $22,771.25; New Amsterdam, $52,905.25, and the Northern Union, $4,375.98. The Consolidated Gas Company had deposited nothing with the Special Master after entry of the interlocutory decree, said the Special Master in his report, but had collected all excess charges for the period from that date (March 30, 1908), to January, 1909, under a stipulation that it would repay the same to the consumer in the event of a reversal of the decree. The total amount thus retained by that Company aggregated $1,959,759.65. While arrangements were being made for the return of the money held by the Special Master, the Consoldiated Company asked that this sum, which it held, might be repaid at the same time and by the same machinery, offering to turn it over to the disbursing banks as required. This proposition was accepted, because such a course would be for the interest of the consumer, who would receive a single check for whatever was due him both from the Special Master's fund and from the Company's treasury. Moreover, by so doing we were assured that the preparation of vouchers and checks for the refund by the Company would be expedited and kept abreast of the work done in connection with the Master's fund. The addition of this $1,959,759.65 made the total amount to be distributed on account of the Consolidated $6,783,245.33, and on account of all the Companies, $10,813,304.95. Speaking of the interest received, the Special Master said: The depository banks generally paid 2½ per cent. interest; for the later deposits, however, only 2 per cent. could be obtained. The various items of interest to October 23, 1909, were: Consolidated, $235,352.52; Standard, $39,417.32; New York Mutual, $34,339.55; Central Union, $27,714.43; New Amsterdam, $50,132.93; Northern Union, $10,100.63. The disbursements up to the date of the report, October 25, showed $380,520.56.

SUPERINTENDENT PHILBRICK, of the Brockton (Mass.) Gas Light Company, reports the satisfactory completion of the new set of water gas apparatus. Thus fortified, he awaits with equanimity the oncoming of the dark days and the period of long nights. It was not so one year ago.

SUPERINTENDENT THOMPSON, of the Rochester (N. H.) Gas Company, has been authorized by his Directors to report the following revised schedule of selling rates:

Monthly Quantity; Cu. Ft	Gross, per 1,000.	Net, per 1,000.
Less than 5,000	$1.95	$1.56
From 5,000 to 10,000	1.85	1.47½
From 10,000 to 20,000	1.75	1.40
From 20,000 to 30,000	1.65	1.32

MANAGER ALBERT M. BARNES, of the Cambridge (Mass.) Gas Light Company, is out with another notification of a reduction in gas rates, the concession to become effective the first of the coming year. The figure agreed on is 85 cents per 1,000. Good enough.

THE November meeting of the New England Section of the Illuminating Engineering Society was held in Boston the evening of Tuesday last. The attendance was excellent and the proceedings were of much interest. The subject for discussion was "The Technique and Application of Gas and Etectricity in the Best Lighting of Modern Homes," the advantages of gas in the narration being set forth by Mr. T. J. Litle, of Gloucester, N. J., and the electrical part of the determining was intrusted to Messrs. H. W. Moses and E. C. Kimball.

AT a recent meeting of the Charlotte (N. C.) Board of Council, on motion of Ald. Whitlock, the petition of the Charlotte Electric, Railway, Light and Power Company, for permission to transfer its title to the Charlotte Gas and Electric Company, was granted.

MR. VANCE, General Manager of the Bristol (Tenn.) Gas and Electric Company, declares that an arrangement has been completed whereunder the development of an extensive hydraulic power station not far from Bristol has been completed. He further asserts that the use of this power will greatly cheapen the generation of electric currents in and about this bustling Tennessee city.

RECENT dispatches from Frankfort, Ky., are to the effect that the Appellate Court has affirmed the decision of the trial court in the in-

stance of the proceeding by the State against the Louisville Gas Company. The proceeding was an attempt by the Assessors to assess the stocks and bonds of the Louisville Lighting Company, which corporation is owned by the Gas Company. The lower court found for the Gas Company, and the higher one, in affirming the decision of the former, found that the securities involved were as effectually valued in making the assessment on the franchise as if these were reported specifically and were assessed for taxation by the State Board of Valuation.

"W. O. V.," writing from Toronto under date of the 12th inst, said: "Some days ago Sir William Meredith, sitting in the High Court, dismissed the suit of the town of Welland, Canada, against the Mutual Natural Gas Company, as to the claim of the former for $15,000 damages. On August 6th, 1907, the driver of the town's steam road roller caused the rupture of a gas main. The escaping gas caught fire, and the flames subsequently communicated with the Methodist church, which was destroyed. The church people received $14,000 damages from the city, and in the present action the municipality sought to recover that sum, with the value of the road roller added thereto. The claim was that the pipe was not properly buried, as specified in the franchise by-law, to which the Company replied that at the point where the rupture occurred the pipe was not passing through the highway, but through land leased from the Dominion Government. Sir William declined to listen to evidence."

Mr. John West seems to be the right man in the right place, in line with his duties as Superintendent of the Hancock (Mich.) Gas Company. It was supposed that, with the outfit completed not such a long time ago, that the Hancock Company would not need to extend its plant on generating account for some time to come. Electric competition was quite brisk in Hancock, but, despite such matter, Mr. West's superiors were applied to not long ago for permission to extend the generating system. The permission was granted too late to bargain for and erect a coal gas extension to the existing system of that type, wherefore, a water gas auxiliary was determined upon. The result is that the Gas Machinery Company, of Cleveland, is under contract to construct for the Hancock folks a 5-foot water gas set complete. The agreement further calls for blower, oil tank, purifiers, station meter—in fact, everything necessary for the premises and the occasion.

"H. C.," writing from Charlotte, N. C., under date of the 15th inst., says: "Last Saturday, Mrs. Helen Armstrong, of Chicago, assisted by Miss Edith Cleft, closed in our city an eminently successful series of lectures on domestic sciences. Though the lectures were delivered in the large Assembly Room of the Selwyn Hotel, the hall was comfortably filled at each session. On Friday afternoon, though, the attendance broke all records during Mrs. Armstrong's Southern trip. An 18-inch cabinet range, with right hand oven, was used for the cooking demonstration."

The Essex and Hudson Gas Company, of Newark, N. J., has declared a dividend of 4 per cent. on the capital stock, payable the first prox.

Natural gas and artificial gas are soon likely to meet on a parity (so far as price is concerned) if the rate under which the Sterling Gas Company proposes to supply the former production in Port Colborne, Canada, at the rate of 32 cents per 1,000 cubic feet for a first 5-year term, and at 42 cents for the second 5-year term goes through.

Messrs. J. G. White & Co., the well known contracting firm whose headquarters are in this city, are growing and developing rapidly, which is little wonder, for those who do business with that concern are always willing to continue in that selection. They have just been awarded the contract for the double tracking of the Albany Southern Railroad, between Rensselaer and Kinderhook Lake, N. Y., as well as the straightening of curves and the rehabilitation of a large stretch of the present track of that Company. In addition to the operation of its third rail electric road between Albany and Hudson, the Railroad Company supplies electric current to the following towns: Rensselaer, East Greenbush, East Schodack, Nassau, North Chatham, Niverville, Valatie, Kinderhook, Stuyvesant Falls and Stottville. It also owns and operates gas plants in Hudson and Rensselaer. All of the named properties are under the direct management of Messrs. J. G. White & Co.

"R. S." writing from Muscatine, Ia., under date of the 11th inst., says: "I happened to be in this bustling place yesterday when the office quarters of the Citizens Railway and Light Company were gutted by fire. There are some offices yet maintained as headq uarters by public utility companies or corporations that it would be advantageous to the community did they burn up—or down; but such could not be truthfully said of the handsome business quarters of the Citizens Corporation of this place. The structure was roomy, commodious and well appointed; but I am sorry to have to here say it that that portion of it which the flames and the firemen saved is not worth mentioning—the loss was possibly $10,000, certainly $8,000. However, to show the spirit that animates and actuates the Childs-Hulswit Company's men, actually before the ruins were even cool, Manager Walker had arranged for temporary quarters, and that night was off for new equipment which will serve temporarily but sufficiently. You know how slow Walker is in his speech! Well, he does not move in like manner!"

PUBLIC LIGHTING TABLE.

DECEMBER, 1909.

Table No. 1.
FOLLOWING THE MOON.

Day of Week.	Date.	Light.	Extinguish.
Wed.	1	5.10PM	9.50PM
Thu.	2	5.10	11.00
Fri.	3	5.10	12.00
Sat.	4	5.10LQ	1.00AM
Sun.	5	5.00	2.00
Mon.	6	5.00	3.00
Tue.	7	5.00	3.50
Wed.	8	5.00	4.50
Thu.	9	5.00	6.10
Fri.	10	5.00	6.10
Sat.	11	5.00	6.10
Sun.	12	5.00NM	6.10
Mon.	13	5.00	6.10
Tue.	14	5.00	6.10
Wed.	15	5.00	6.10
Thu.	16	5.00	6.10
Fri.	17	8.30	6.10
Sat.	18	9.40	6.10
Sun.	19	10.50FQ	6.20
Mon.	20	11.10	6.20
Tue.	21	1.20AM	6.20
Wed.	22	2.30	6.20
Thu.	23	3.50	6.20
Fri.	24	5.00	6.20
Sat.	25	No L.	No L.
Sun.	26	No LFM	No L.
Mon.	27	No L.	No L.
Tue.	28	5.10PM	7.30PM
Wed.	29	5.10	8.40
Thu.	30	5.10	9.40
Fri.	31	5.10	10.50

TOTAL HOURS DURING 1909.

By Table No. 1.

	Hrs.Min.
January	212.20
February	183.40
March	173.00
April	151.10
May	144.10
June	138.50
July	145.40
August	160.30
September	180.00
October	201.00
November	216.30
December	233.40
Total, yr.	2140.30

PUBLIC LIGHTING TABLE.

DECEMBER, 1909.

Table No. 2.
NEW YORK CITY.
All Night Lighting.

Day of Week.	Date.	Complete Lighting in One Hour	Complete Extinguishing in 50 Minutes
		From Time Given	
		P. M.	A. M.
Wed.	1	4.07	5.52
Thu.	2	4.07	5.52
Fri.	3	4.02	5.57
Sat.	4	4.02	5.57
Sun.	5	4.02	5.57
Mon.	6	4.02	5.57
Tue.	7	4.02	5.57
Wed.	8	4.02	5.57
Thu.	9	4.02	5.57
Fri.	10	3.57	6.07
Sat.	11	3.57	6.07
Sun.	12	3.57	6.07
Mon.	13	3.57	6.07
Tue.	14	3.57	6.07
Wed.	15	3.57	6.07
Thu.	16	3.57	6.07
Fri.	17	3.57	6.17
Sat.	18	3.57	6.17
Sun.	19	3.57	6.17
Mon.	20	3.57	6.17
Tue.	21	3.57	6.17
Wed.	22	3.57	6.17
Thu.	23	3.57	6.17
Fri.	24	4.02	6 22
Sat.	25	4.02	6.22
Sun.	26	4.07	6.22
Mon.	27	4.07	6.22
Tue.	28	4.07	6.22
Wed.	29	4.07	6.22
Thu.	30	4.07	6.22
Fri.	31	4.12	6.27

TOTAL HOURS DURING 1909.

	Hrs.Min.
January	428.30
February	358.15
March	353.10
April	298.10
May	263.20
June	234.45
July	248.30
August	278.00
September	311.25
October	370.05
November	397.40
December	438.35
	3980.25
Deduct on account of 50 min. extinguishing time	30.25
Total, yr.	3950.00

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHARLES H. WADELTON,
MANAGER.

MONDAY, NOVEMBER 22, 1909.

The Market for Gas Securities.

Consolidated opened to-day (Friday) at 142⅝ to 142½, which figure, we think, is ex div. of 1 per cent. Whether so or not, the shares look very inviting at the figures given. There is no change in Brooklyn Union. Both Companies are showing large gains in sendout as compared with outputs for last year. Consolidated should well pass the 100-million mark in 24 hours next month—if not this.

The American Gas Company, through Treasurer Godley, announces a semi-annual dividend of 3½ per cent., which puts the Company on a 7 per cent. basis. Mr. H. H. Rogers, son of the late H. H. Rogers, has been elected a Director of the Brooklyn Union Gas Company, and Mr. W. H. Whitton has been elected Treasurer of the Laclede Company, which move was the just recognition of the value of a thoroughly capable man.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

NOVEMBER 22.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$73,177,000	100	142⅝	142½
Central Union Gas Co. —				
1st 5's, due 1972, J. & J.	8,000,000	1,000	98	101
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	2,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	100	101
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	141⅜	143
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91⅜	92
Yonkers	299,650	500	130	—
Out-of Town Companies.				
Bay State	50,000,000	50	1	1⅛
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	90	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	73	73½
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,860,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	50
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104⅜	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	103	103½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis	10,000,000	100	104	105
Preferred	2,500,000	100	—	98
Bonds	10,000,000	1,000	104	—
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	106¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	75⅛	76
Preferred	25,000,000	100	87½	90
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	113½	114
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104½	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	751,000	1,000	100	102
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	90	95
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	100	104
Washington (D. C.) Gas Co.	600,000	29	337	340
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	230	—

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DIVIDEND NOTICE.

No. 222 S. THIRD ST., Philadelphia, Pa., Nov. 16, 1909.

The Board of Directors of The American Gas Company has this day declared a semi-annual dividend of 3½ per cent., or $3.50 per share, on the capital stock of the Company, payable Dec. 1, 1909, to stockholders of record on Nov. 20, 1909, at 3 P.M. Transfer books close Nov. 20, 1909, and re-open Dec. 1, 1909. Checks will be mailed.

1798-1 W. T. ROBINSON, Treasurer.

Wanted Position.

Man, aged 27, in charge of distribution, and sales manager of gas and electric company in town of 50,000, will be open for engagement in middle or south Atlantic States Jan. 1. Nothing but a permanent place will be considered.

1798-2 Address, "BANK," care this Journal

Position Wanted

As Manager or Superintendent of a Gas Plant,

By a competent man, who has had 12 years' experience in the manufacture and distribution of coal and water gas.

1797-2 Address, "A. H. D.," care this Journal.

Position Wanted.

The advertiser, 40 years of age, who thoroughly understands the making, testing and repairing of gas meters, wishes to secure a situation, either in a meter shop or to act either as foreman or journeyman in the repair shop of a gas company. Is competent to look over complaint work or to handle services, connections, etc.

Address, "WATER MAIN,"

1798-1 Care this Journal.

Position Wanted

As Superintendent of Gas Works,

In town of 8,000 to 50,000 population, or superintendent of works alone, in town sending out 100,000 to 300,000 cubic feet per day; either coal or water gas, high or low pressure. Will be open first of year. Address, "W.,"

1798-2 Care this Journal.

Solicitor Wanted.

Hustling and competent gas solicitor, familiar with the sale of all gas appliances. Give references, experience and salary required, in first letter. Address, "A. B. C.,"

1798-1 Care this Journal.

WANTED.

To Correspond with Mayors of Towns

Of 5,000 and over, willing to grant liberal franchises to a gas and electric light and power company, which will furnish modern equipment and splendid service. Address, "R. M.,"

1796-4 Care this Journal.

WANTED,

To Purchase a Gas and Electric Plant,

In city from 5,000 to 15,000 population. Must be reasonable in price and terms.

1796-4 Address, "C. M. R.," care this Journal.

WANTED,

One Second-Hand Gas Exhauster,

Capable of handling 8,000,000 to 10,000,000 cubic feet of gas per 24 hours.

1798-1 Address, "B. E.," care this Journal.

TO MANAGERS OF GAS WORKS.

Managers who are handicapped in making a success of their companies on account of the directors not being progressive, or from a lack of necessary capital, who feel, if placed in absolute control and allowed to use their own judgment in matters of improvements and extensions, a larger and more profitable business would result, can make a most advantageous connection with the interests advertising, who desire to purchase a number of gas properties that are run down. Prosperous ones do not afford the opportunities required. Address, with full particulars, which will be treated as strictly confidential.

"TRUST COMPANY,"

1794-2 P. O. Box 2,130, New York.

FOR SALE,

One set of 4 purifying boxes 12 feet 8 inches by 10 feet 9 inches by 3 feet, in good condition, with centerseal and 10-inch connections. Also one American 8-foot station meter.

1771-tf YORK GAS CO., York Pa.

FOR SALE,

Second-hand gas apparatus in good order. Selling because outgrown. Ready for immediate delivery.

One 6-foot Tufts' Station Meter, Hinman Drum, 10-inch connections.
One 5-foot Tufts' Station Meter, Hinman Drum, 8-inch connections.
One Standard Washer Scrubber and Standard, with inlet and outlet valves, 10-inch connections.
One No. 3 P. & A. Tar Extractor, 8-inch connections.
Two 3-blade McKenzie Exhausters, 8-inch connections.

NEW BEDFORD GAS AND EDISON LIGHT COMPANY,

1798-tf NEW BEDFORD, MASS.

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Utilize Your Gas Liquor.
NO EXTRA LABOR OR OPERATING EXPENSES.
IMPROVED AMMONIA CONCENTRATOR.
About 100 in use. Write to
STROH & OSIUS, Patentees, or
MICHIGAN AMMONIA WORKS, - Detroit, Mich.

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CONSULTING ENGINEER,
Commercial National Bank Building,
CHICAGO.
Also Representing
The Bartlett-Hayward Company.

ALBERT LADD COLBY,
CONSULTING ENGINEER.
THE UTILIZATION OF WASTE HEAT from, and LABOR-SAVING DEVICES for COKE OVEN PLANTS.
Cable Address: "ALADDCO," So. Bethlehem, Pa
All Usual Codes.

THE ECONOMICAL GAS APPARATUS CONSTRUCTION COMPANY, LIMITED,
Consulting Engineers.
Builders of UP-TO-DATE Machinery and Appliances for Coal and Water Gas Plants. :: :: :: :: ::
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269 Front St., East, Toronto, Canada.

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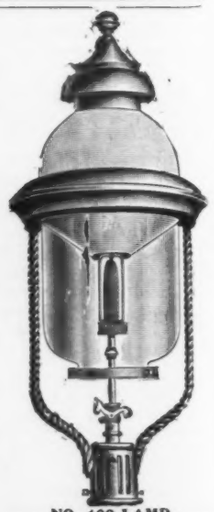
DETROIT—MICHIGAN

"THE MINER"
GLOBE STREET LAMPS.
OVER FORTY YEARS IN USE THE WORLD OVER.
THE BEST STREET LAMPS for ALL KINDS OF GAS OR BURNERS.
This is only one of a Large Variety of Styles.
SEND FOR CATALOGUE.
THOS. T. W. MINER,
821 and 823 Eagle Avenue, New York.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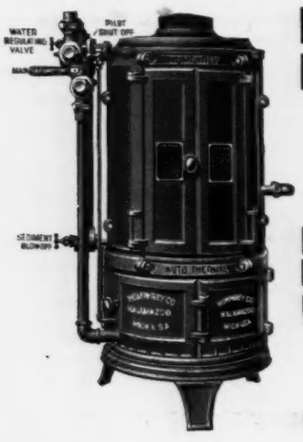

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Have every known desirable feature helping to efficiency, economy, durability and absolute safety.
FULLY GUARANTEED.
PRICES LOW.
QUALITY AND SERVICE HIGH.
Will you help us sell them?
HUMPHREY CO.,
Kalamazoo, Mich., U. S. A.

BINDERS FOR THE JOURNAL.
PRICE, **$1.**
FOR SALE BY
AMERICAN GAS LIGHT JOURNAL 42 Pine St., New York City.

The following paragraphs have been extracted from letters in our files. The writers are officers or engineers associated with companies having **Rotary Meters** in service. The **Rotary Meters** on which these expressions of judgment are based have an aggregated capacity of

107,365,500 cubic feet per day, or
39,188,407,500 cubic feet per annum

more gas than the **combined annual** send-out of the gas works operating in the cities of **Philadelphia, Boston, Newark, Washington, Detroit, Grand Rapids, Indianapolis, Milwaukee, Louisville, St. Louis, New Orleans, Denver and San Francisco:**

"I am very much pleased with it."

"Has given us continuous satisfaction."

"We are entirely satisfied with our Rotary Meters."

"We find the meters to be most advantageous."

"I feel satisfied with the Rotaries under my charge."

"The Rotaries have continued to give very good satisfaction."

"The Rotary Meter has given entire satisfaction in every way."

"It is very consistent in operating; giving entire satisfaction."

"Has given us entire satisfaction; accurate and require slight attention."

"It requires the minimum of attention, and it has proven accurate and thoroughly reliable."

"The meter (Rotary) requires very little attention, and is giving perfect satisfaction so far as we can see."

"The Rotary Meter has worked satisfactorily up to this time, with which I am very much pleased."

"We have found our Rotaries very satisfactory. Your meters are running in fine shape. Keep up the good cause."

"Nothing I can say would be too strong to express my satisfaction with the operation of the Rotary Meter we are using"

"Every cubic foot of gas is measured through eight Rotary Meters, which have given every satisfaction."

"I am a thorough convert to the adaptability and practicability of the Rotary Meter. Have them in all our plants."

"Since installing these meters they have been in continuous use, and they are working very smoothly and satisfactorily."

"From the continued use of this meter we have as much confidence in its registration as in the ordinary wet meter."

One-half the Cost--One-tenth the Space of Old Style Wet Meters.

When in Need of Station Meters Write

ROTARY METER COMPANY,
280 Broadway,
NEW YORK.

Send for Catalog.

P. PLANTINGA, President W. E. STEINWEDELL, Secretary

THE GAS MACHINERY CO.,

Main Office and Shops

CLEVELAND, OHIO.

NEW YORK OFFICE, - - 56 PINE STREET.

COAL AND WATER GAS APPARATUS,
EXHAUSTERS, CONDENSERS, SCRUBBERS,
TAR EXTRACTORS, WASHERS, PURIFIERS,
VALVES, CONNECTIONS,
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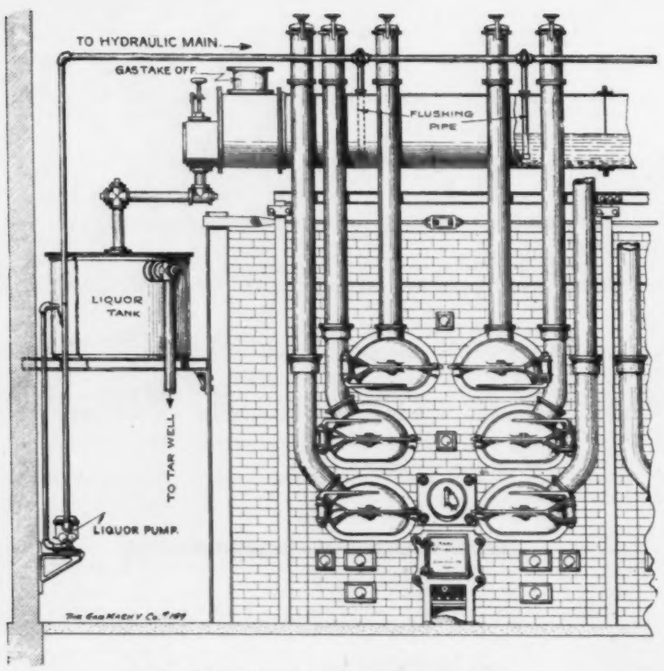

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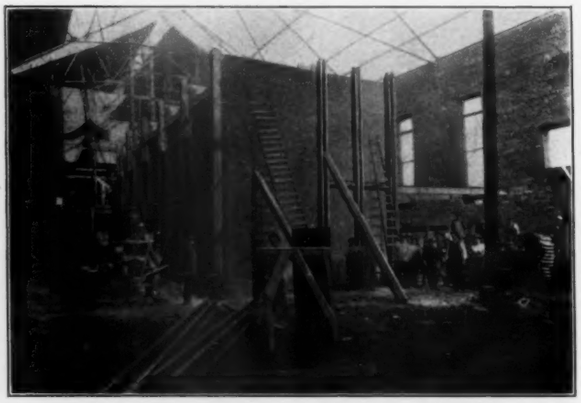

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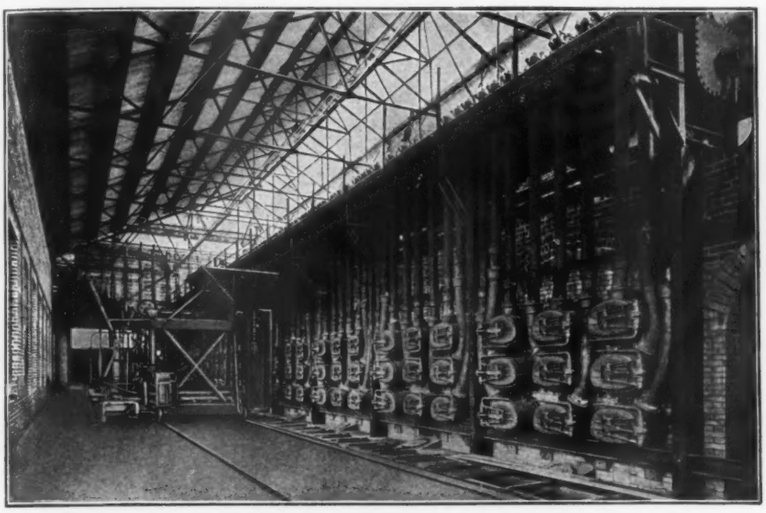

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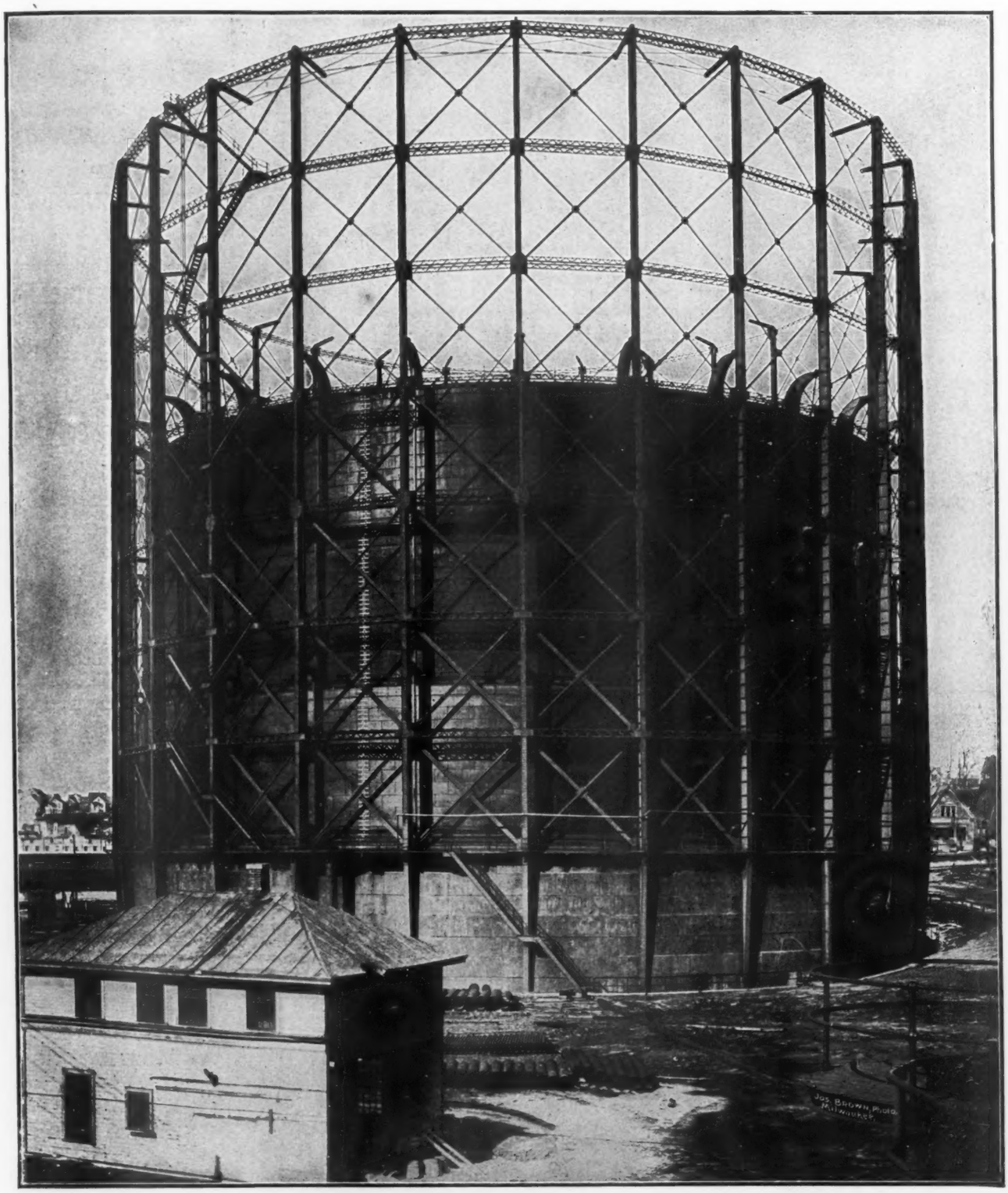

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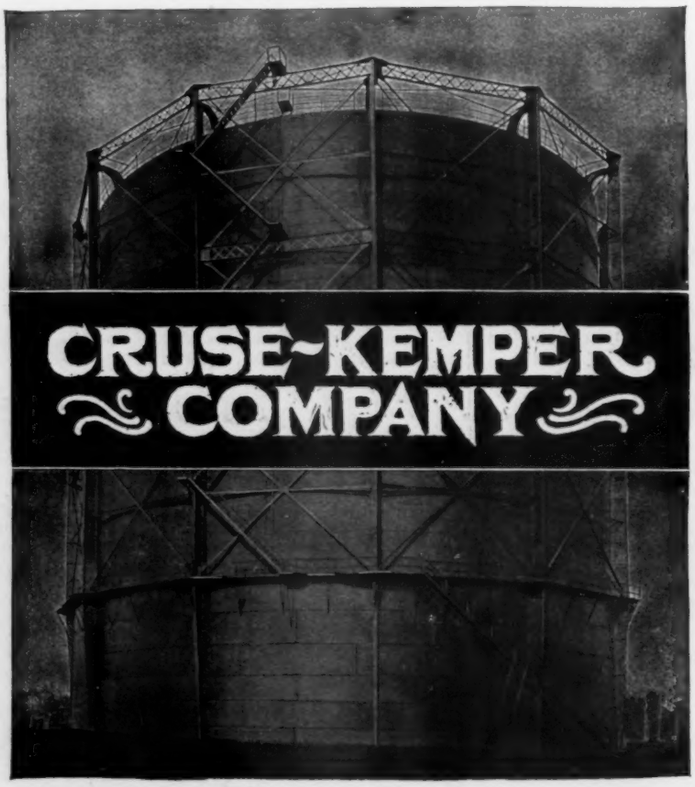

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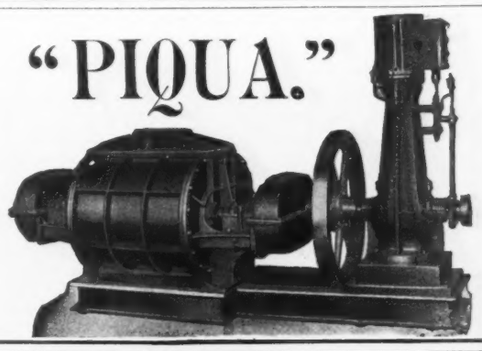

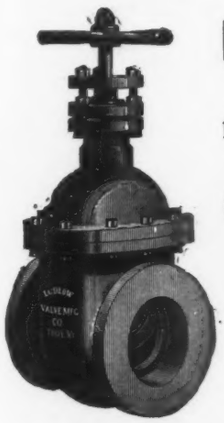

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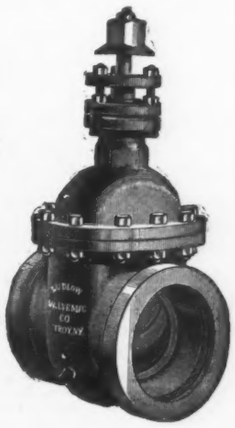

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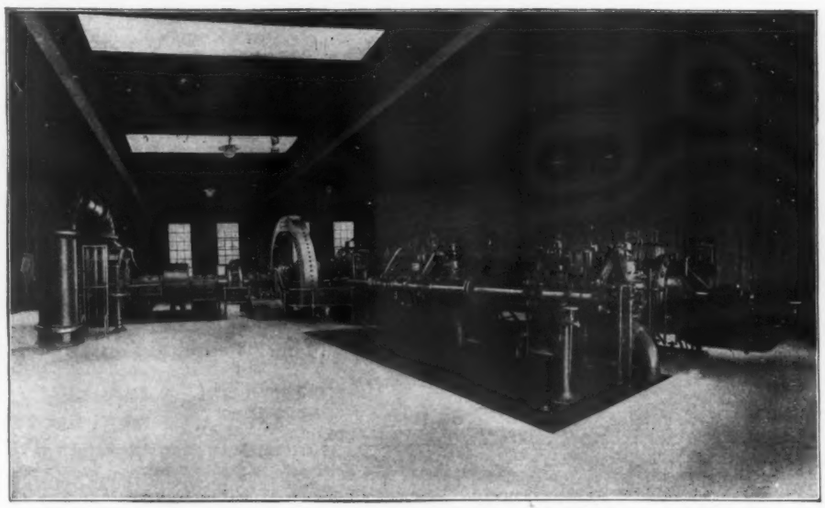

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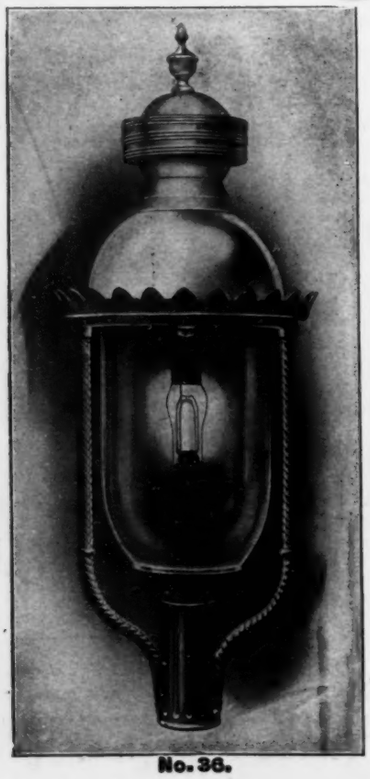

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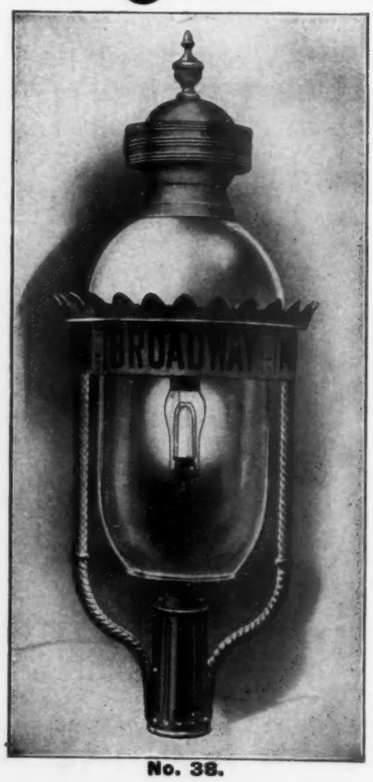

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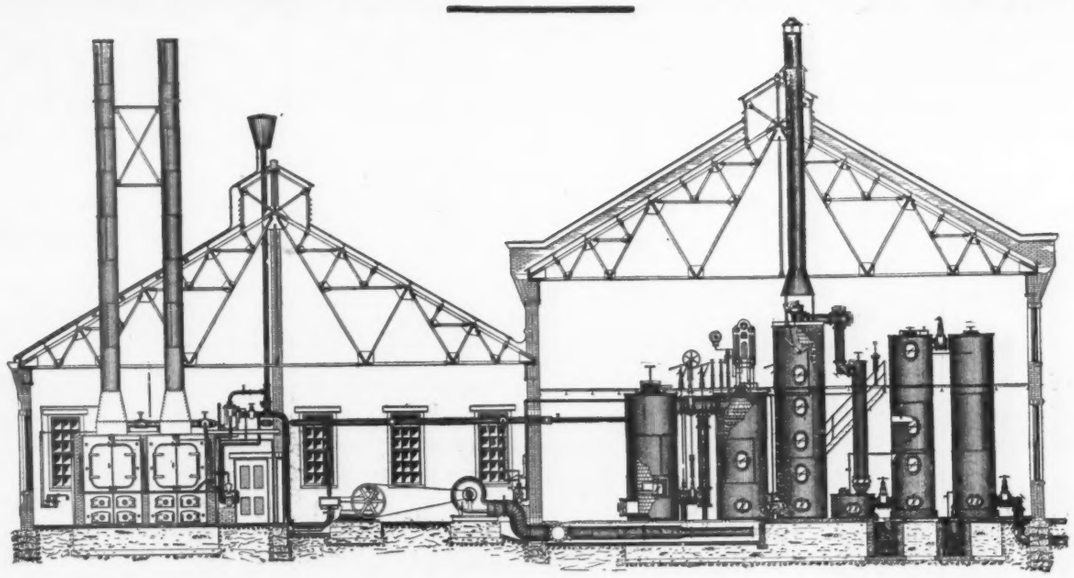

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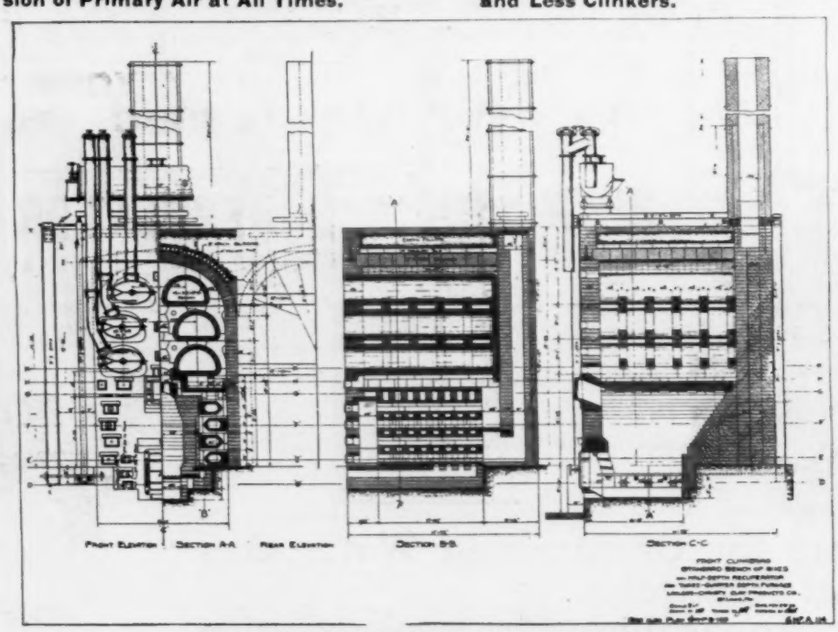

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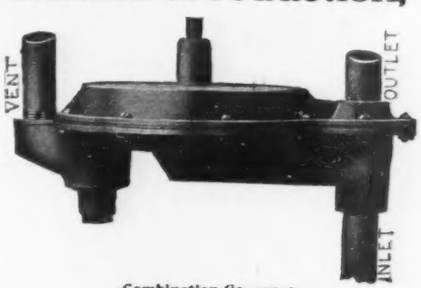

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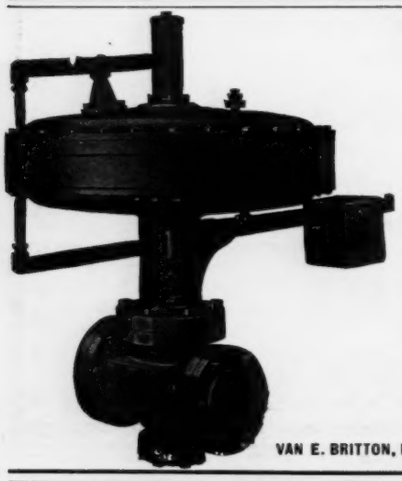

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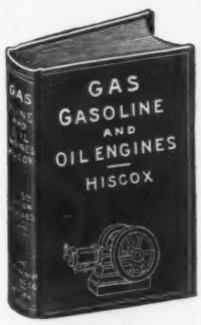

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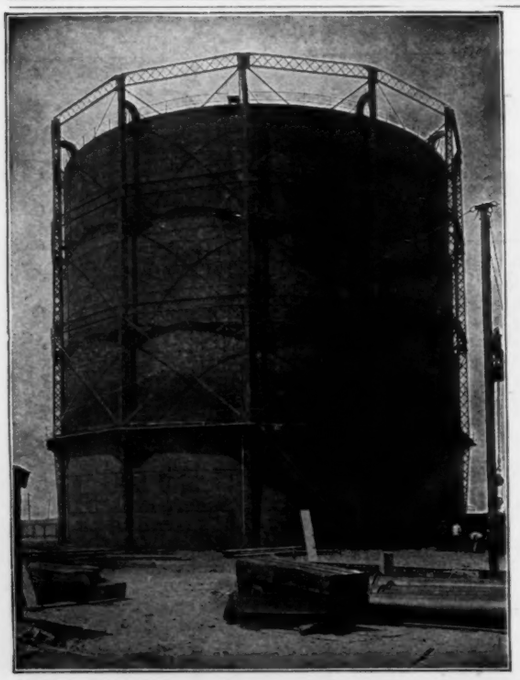

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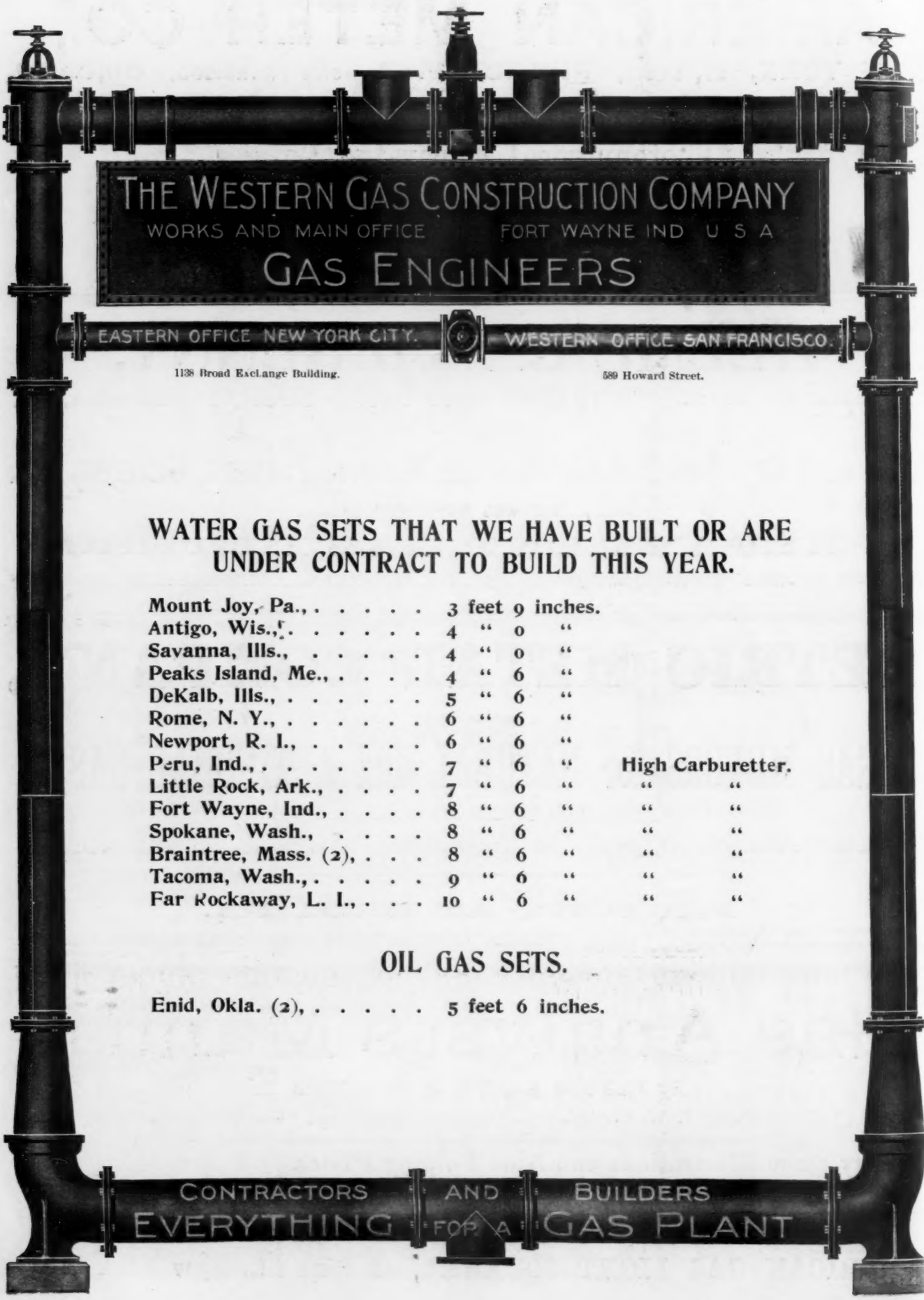
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